Council of the European Union
General Secretariat

GLOSSARY

TECHNICAL TERMS RELATED TO SECURITY FEATURES AND TO SECURITY DOCUMENTS IN GENERAL (IN ALPHABETICAL ORDER)

v. 12344/22

Preface

This glossary, first issued in 2007, is an example of successful cooperation between European document experts from all European Union member states and Iceland, Liechtenstein, Norway and Switzerland.

The purpose of this glossary is not only to explain technical terms used in document descriptions in **PRADO (PUBLIC REGISTER OF AUTHENTIC TRAVEL AND IDENTITY DOCUMENTS ONLINE),** but also to promote the use of consistent terminology and contribute to mutual understanding as a basis for effective communication and for police and administrative cooperation – in 24 official EU languages. It is also intended to help raise awareness among those having to check identities and ID documents - document experts will not be able to decide on the authenticity of a questioned document unless suspicions are raised by PRADO users who ask their local police, or the responsible national contact point, for further guidance.

Contributing to better communication and cooperation is a means of combating illegal immigration and organised crime and strengthens security at the external borders and elsewhere.

I would like to thank all those who made it possible to produce this PRADO Glossary.

Christine Roger

Director General
Directorate General Justice and Home Affairs
General Secretariat of the Council of the European Union

Introduction

This glossary is intended to assist the reader with terms that appear within PRADO; it does NOT provide scientific definitions – its main purpose is to help anyone who is not involved in checking security documents on a daily basis to understand the wording used in PRADO and to recognise some of the more important security features contained in travel and identity documents. To this end, simple, non-exhaustive definitions, examples and explanations are provided.

In order to consult the same chapter in a different language version of this document, look for the corresponding grey three-digit chapter number on the top right-hand side of each chapter.

Please send any suggestions for improvements and observations on errors and bugs to:
helpline.PRADO@consilium.europa.eu

We suggest you to first consult the chapter on ➡ *IDENTITY FRAUD AND DOCUMENT FRAUD* if you want to read this alphabetic glossary e.g. for training purposes.

Anti-scan / anti-copy pattern

Anti-scan / anti-copy patterns are printed security features integrated in the ➡ *background / security printing* to protect against simulation through copying.

The printed images and patterns contain embedded (hidden) information (for example constructed of fine lines) that is invisible to the naked eye under normal inspection conditions but becomes visible or legible or causes flaws (mistakes) to appear after copying or reproduction with a scanner.
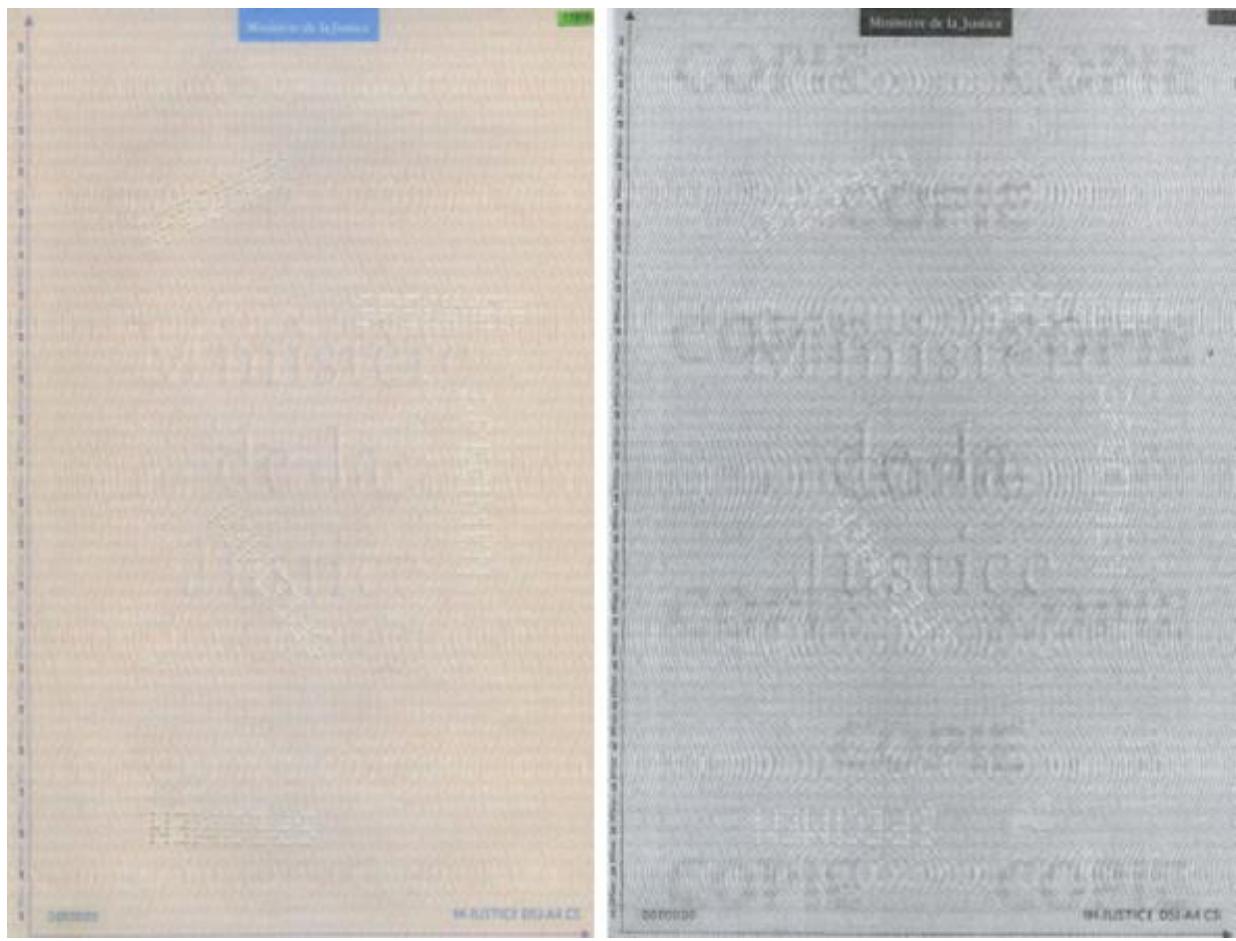
Original   **Copy ("COPIE" is visible)**

2nd example:
Orientation- and angle-modulated fine-line structures (**SAM** = **S**creen **A**ngle **M**odulation)

Anti-copy pattern

Background / security printing

Background / security printing serves as a protection against counterfeiting and manipulation of data.

- *Background / security printing* consists of print designs and security elements, like e.g.
    - ➡ *guilloches / fine-line patterns*
    - ➡ *microprint*
    - ➡ *rainbow colouring*
    - ➡ *see-through register*
    - ➡ *latent image*

- *Other security printing* techniques and printing processes used include e.g.
    - ➡ *intaglio printing*, as well as e.g. *security inks* (e.g. ➡ *OVI,* ➡ *fugitive ink*).

Background printing denotes the coloured (usually) ➡ *offset printing* used as a background to other security printing techniques and security elements like e.g. ➡ *intaglio printing*, ➡ *pre-printed text* and ➡ *biographical data* in security documents.

Background / security printing with various features, here:

- **guilloches / fine-line patterns**
- **grid pattern**
- **microprint**
- **solid-coloured areas, and**
- **relief fine lines.**

Not to be confused with: ➡ *Pre-printed text.*

Barcode / 2D barcode

Machine readable information.
See also: ➡ *Machine verifiable feature*

A barcode (1D barcode) stores data in the widths of, and spaces between, printed parallel lines (bars) for machine-optical data capture.

1D barcode representing serial number

A 2D barcode (two-dimensional barcode) stores data along two dimensions and is therefore capable of containing much more information:
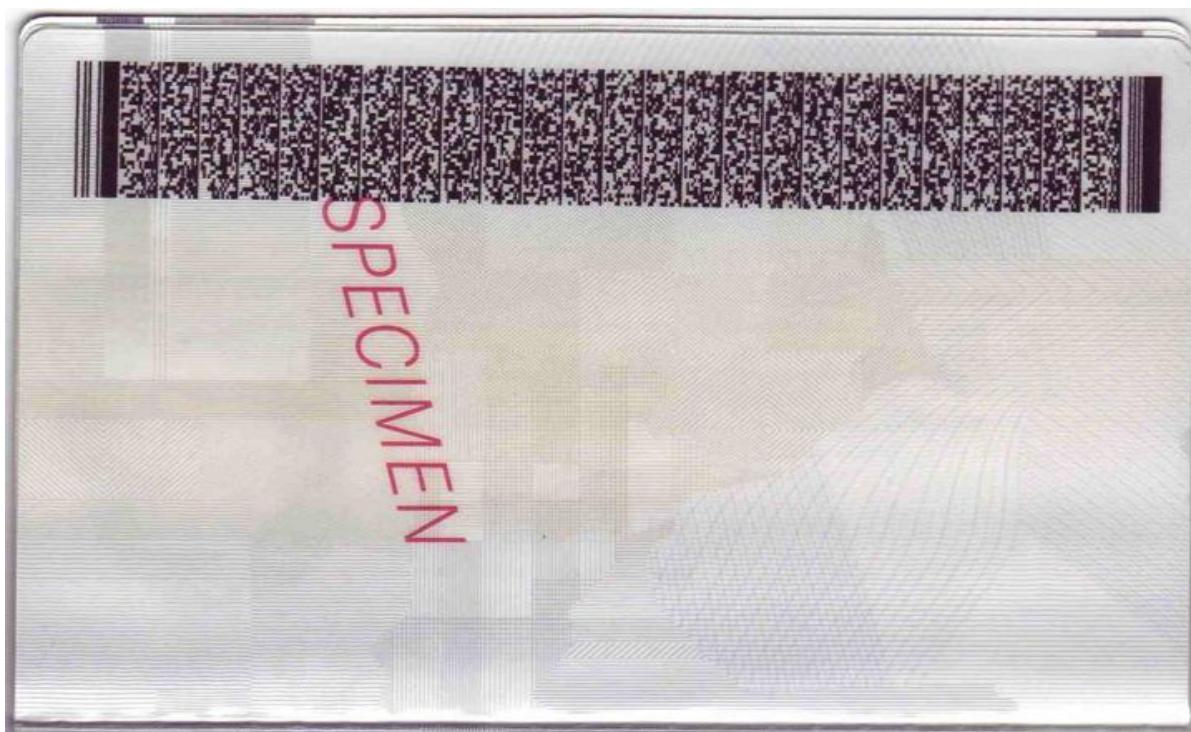
Visible digital seal (VDS)

Optically verifiable cryptographic protection of non-electronic documents: A ***visible digital seal*** is used for the authentication, verification and acquisition of data carried by a document or object; it is cryptographically signed according to ***ICAO specifications.*** Its data structure (ISO/AWI 22376) contains document features encoded as a ***2D bar code.*** The code can be printed on a document and it can be scanned:

Data matix code, Aztec code, or ***QR code.***

Data matrix code

As the storage capacity in monochromatic 2D barcodes is limited, the ***JABcode (Just Another Barcode),*** a ***colour 2D barcode,*** is part of the ISO/IEC standardisation process.

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Binding

Binding is the act of combining single sheets to form a book, booklet or brochure.
Most common ***binding techniques*** used for ID documents:

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Thread stitching - **"<u>stitched in the spine</u>"** (***saddle stitching*** with a ➡ ***stitching thread***).
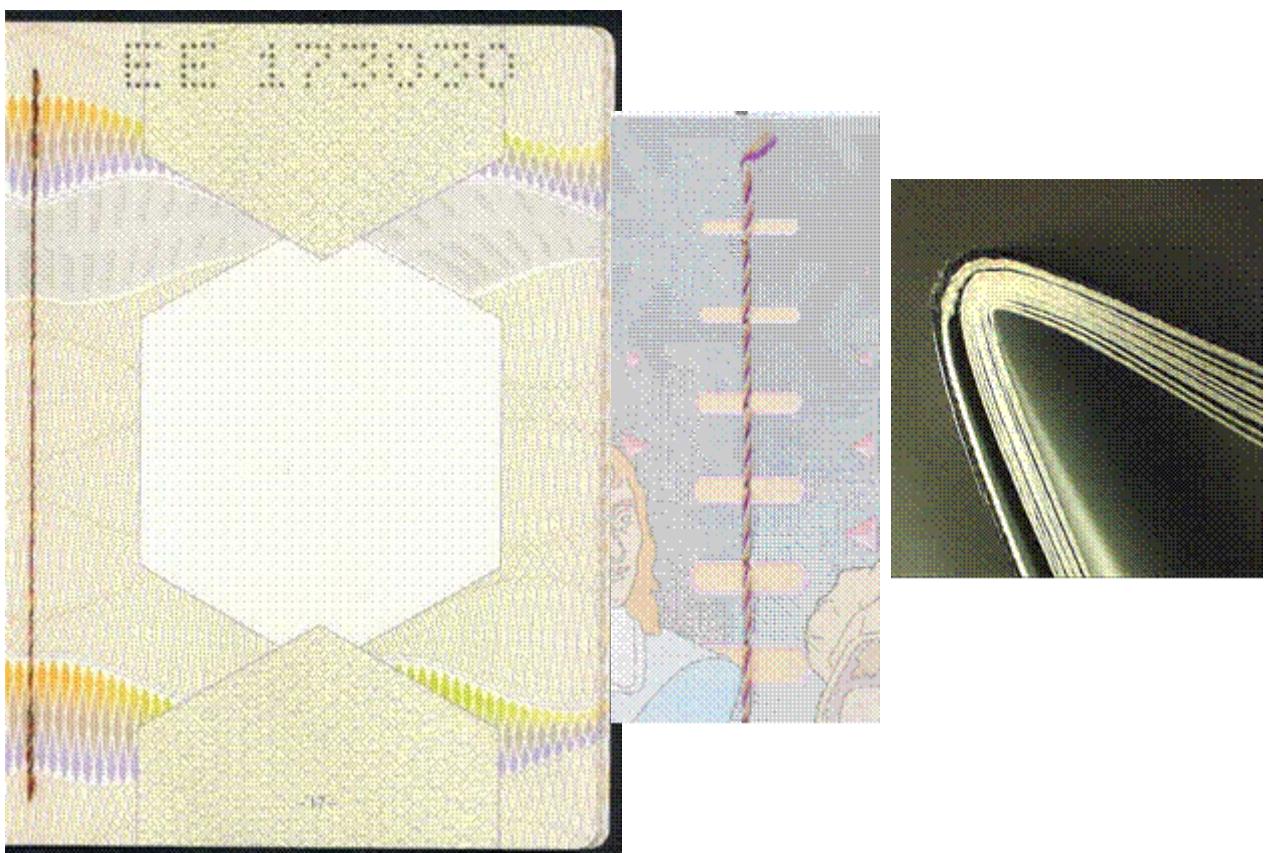
Side stitching with thread

A distinction is made between the binding of *single pages* and the binding of *__double pages__*.
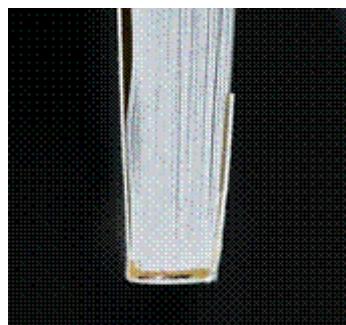
Single pages
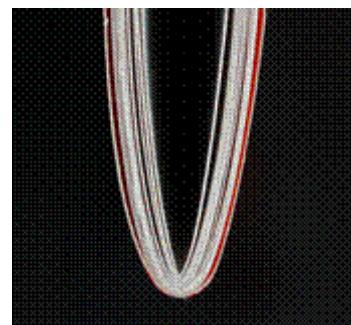
Double pages

Overall construction: a *booklet* may be constructed as a *single booklet* or a *multiple booklet.*
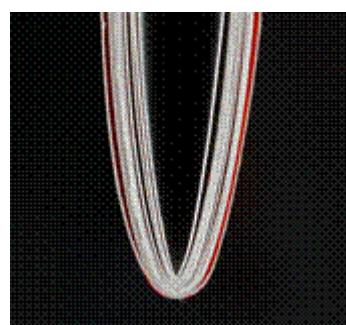
Single booklet
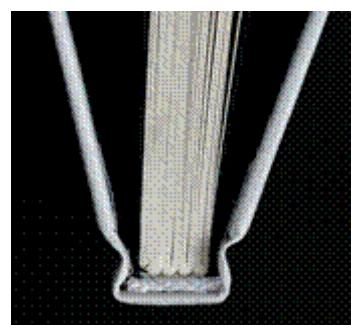
Multiple booklet

Reinforcing strip: makes for a stronger construction:
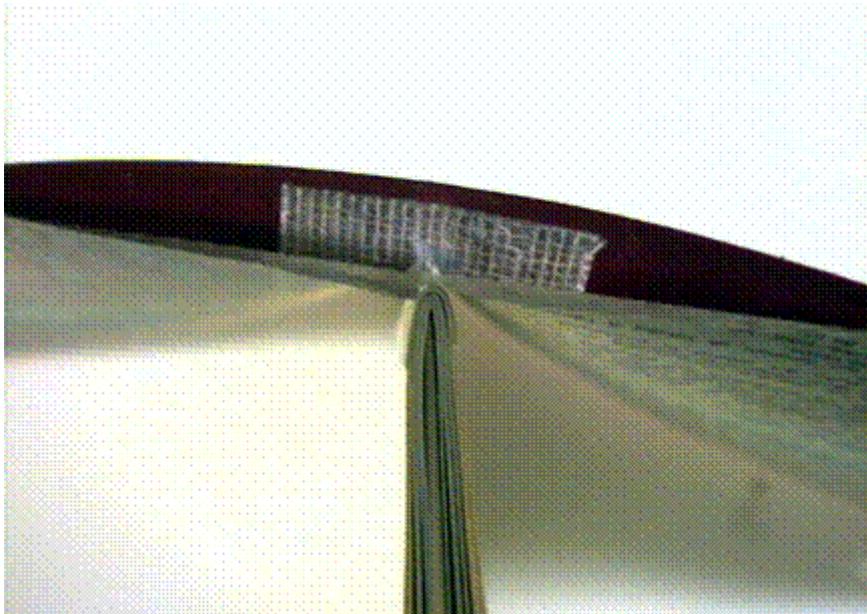
- ## Hinge

Hinge - bound edge of biodata card

Fluorescent overprint on hinge of biodata card

Hinge fused on to the polymer biodata card with (visible and tactile) embossing

Customised metallic hinge image (CHI™)

Hinge strip containing recessed motifs
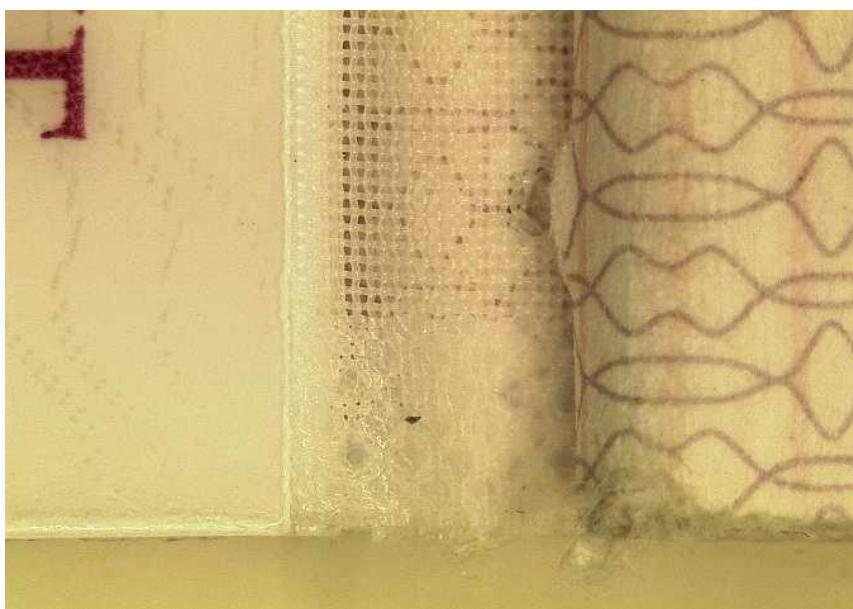
Hinge: flexible woven fabric used to attach the polycarbonate biodata card to a booklet document, fused into the polycarbonate body of the biodata card.

VisiFab^{TM} UV: ➡️ **fluorescent ink** is used and **fluorescent fibres** as part of the woven fabric.

➡️ **PC (polycarbonate)** card

See also: ➡️ **Laminate integrated by binding**

Biodata / photo / signature integration

Biodata / photo / signature integration refers to an operation whereby a printing, (laser-) engraving or photographic technique is used (as opposed to a typewriter or writing by hand) to incorporate an image (photograph of holder), a signature or biodata text directly into the substrate or laminate during the personalisation process.

Photo integration: The image will not constitute a separate (e.g. glued) component of the document, but will form an integral part of it: the photo is printed on (sometimes also, in addition, a ➡️ **Secondary (ghost) image**, e.g. converted into a perforated pattern design on) the **visual inspection zone (VIZ)** on the biodata page.

Integration here is <u>independent</u> of whether the biodata text / image is laminated or not, but most digital images on a biodata page in a passport will be protected by a laminate. In addition, other visible safeguards are often used: ➡️ **Laminate.**

<u>Look for signs of alterations!</u>

See also: ➡️ **Biographical / other personalisation text**

Integration techniques:

➡️ **Inkjet printing**
➡️ **Laser engraving**
➡️ **Laser printing**
➡️ **Photographic process**
➡️ **Thermal dye sublimation**
➡️ **Thermal transfer printing**

Laser-engraved integrated image

Biodata, photo & signature integration by ➡ *photographic process*

Biographical / other personalisation text

Personalisation is the process whereby the document holder's image, signature and biographical data are incorporated into a document.

The holder's ***biographical data (biodata)*** appear in the ***visual inspection zone - VIZ*** and in the ➡ ***MRZ (Machine Readable Zone)*** of a passport (on the biodata page), ID card or visa; in ➡ ***e-passports*** they are also included in the ➡ ***microchip.***

See also: ➡ ***Holographic personalised security thread***

Integrated biodata card (biodata page) of a passport

VIZ

MRZ

See also: ➡ ***Biodata / photo / signature integration***

Biometric identifier (biometric data)

A *biometric identifier* is a personal biological (anatomical or physiological) or behavioural characteristic which can be used to establish a person's identity by comparing it with stored reference data. Traditionally, the most popular biometric identifiers are **fingerprints** and the **facial image.** Other frequently used biometric identifiers include the **iris image** and **hand geometry.** Biometric identifiers can be used for biometric recognition processes such as *facial and iris recognition*. The method of measuring biometric identifiers is known as *biometrics*.

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• e-Passport

In *e-passports, personal data (identifiers)* are stored in an embedded microchip (integrated circuit). Pursuant to ICAO (**I**nternational **C**ivil **A**viation **O**rganization) specifications, a ➡ *microchip - contactless -* as a minimum requirement - stores the data contained in the ➡ *MRZ (Machine Readable Zone)* of the biodata page of the passport **and** the facial image as the interoperable biometric identifier. Additional biometric identifiers, like the signature, fingerprints, or iris images, can also be included.

The biometric data on the chip can be compared with the document holder's biometric characteristics and the data on the biodata page of the document. This can for example be done manually, by using a document reader, or an automated *e-gate* system can be used. As a safeguard to protect the authenticity and integrity of the stored data, a digital signature is used. The technology used is called the ICAO Public Key Infrastructure (PKI). The digital signature can be used by checking authorities to ensure that the data in the chip of an e-passport come from the correct, trusted issuing authority and have not been altered.

An ICAO-compliant e-passport will feature the international e-passport symbol on its outside front cover:
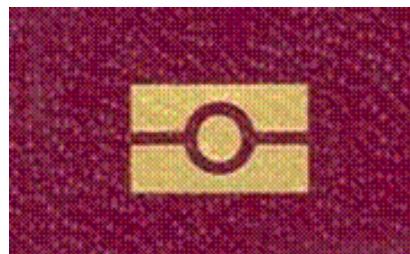
See also: ➡ *Biographical / other personalisation text*
See also: ➡ *Biodata / photo / signature integration*

See also: ➡ *Machine readable travel document (MRTD)*
See also: ➡ *Machine verifiable feature*

Bleeding (penetrating) ink

Bleeding (penetrating) ink is a *security ink* containing dyes which, together with the solvent used, *penetrate* ("bleed out or through") the paper substrate so that any attempt at mechanical erasure will cause visible damage to the document.

Serial number printed in bleeding (penetrating) ink

Part of the numbering ink has bled through the paper substrate and can be seen on the reverse side.

➡ *Letterpress printing.*

Not to be confused with ➡ *fugitive ink.*

Chip (microchip) with contact

Integrated circuit (microchip) for the storage and processing of data, embedded for example in ID cards. The secure electronic medium contains for example the personal data: name, date of birth, place of birth, issuing office and a digitised version of the image of the holder. An ID card with a contact chip <u>must be inserted into a reader</u> (slot) to make contact with electrical connectors so that the information can be read from it.

The **visible** parts of the chip module are usually the typical gold contacts (but silver-coloured contacts also exist, with a palladium (Pd) surface). A regularly used chip shows slight (brighter) horizontal scratch marks.

Tactile features: Shallow gaps of about 0.01mm depth (<u>never</u> (raised) ridges!) separate the different metal contact areas. Around the outside of the contact module typically a gap of about 0.1mm depth can be felt e.g. with a fingernail.

Cards with a **contact microchip** can in addition also incorporate a ➡ *contactless microchip*.

See also: ➡ *Machine verifiable feature*

Co-axial light

Co-axial light is light that passes through an optical system parallel to the optical axis (e.g. retro-viewer), for instance where the direction of illumination and direction of observation are in parallel. Co-axial light is used to reveal hidden motifs in ➡ *retroreflective laminate* (e.g. 3M® Confirm® laminate).

The angle of view is co-axial to the (re-directed) light beam:

Semi-transparent mirror

Page of document (Security laminate)

Document examiner

Light source / angle of incidence of light
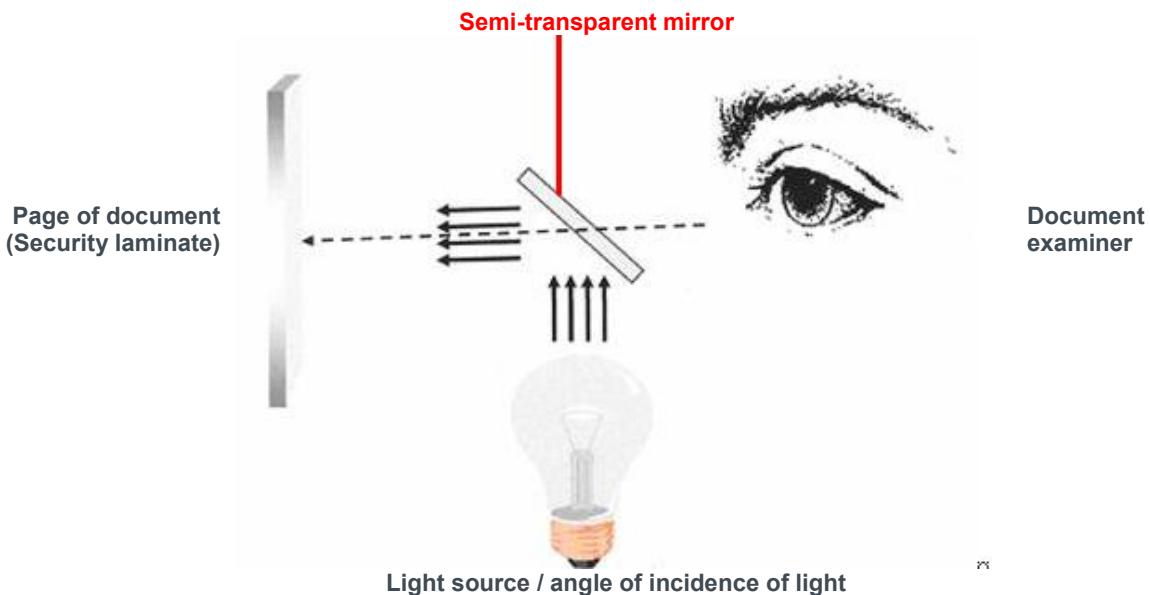
Not to be confused with ➡ *oblique light.*
Not to be confused with ➡ *transmitted light.*

See also: ➡ *UV light*

Collation mark / floating numeration

(Columns of the dynasty of Gediminas)   **("LTU")**
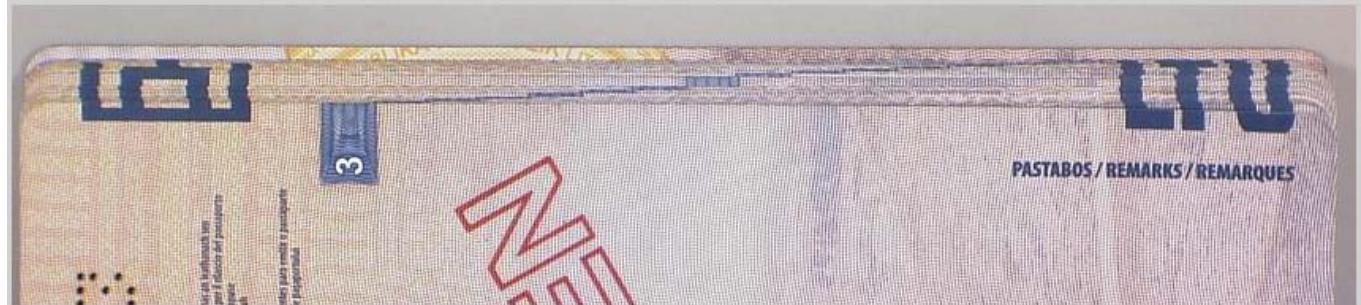
Collation mark is originally a bookbinding term. In order to produce a complete work (brochure, book, periodical, etc.), the various parts (sheets and folded sheets that have been nipped - sections) must be collated in the right order. This is ensured by placing collation marks as check marks (in the case of books, usually at the spine of the book block) in a staggered arrangement from top to bottom.

In passports, this type of **register mark** or **position mark** is an additional safeguard. It makes it easier to spot whether any pages have been exchanged or removed.

It can be invisible under normal light ➡ **fluorescent overprint**, or a **visible feature (using normal ink or** ➡ **fluorescent ink).**

The combination of **collation mark** and **page numbers** is sometimes called **floating numeration**.
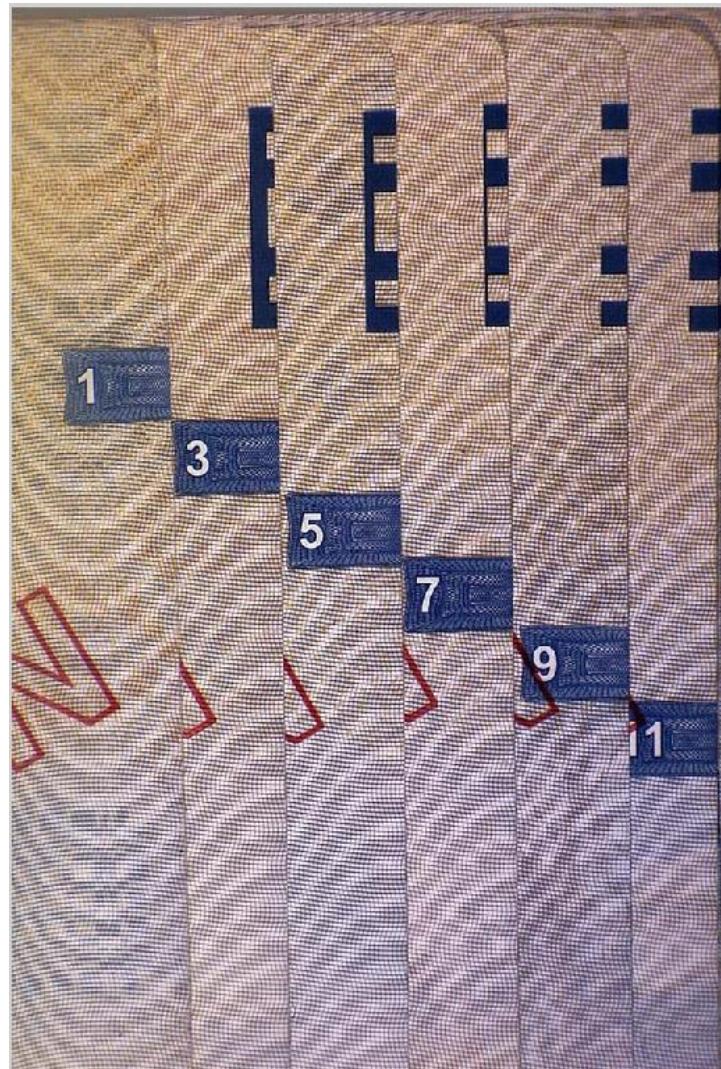
Coloured security fibres

Look at the page under **NORMAL LIGHT**; you can also use a magnifying glass.
Their colour makes *security fibres* stand out clearly against the paper substrate; they can easily be seen with the naked eye.

Coloured security fibres are fibres in various colours, or multi-coloured, which are mixed into the paper pulp during the paper manufacturing process, so that they are embedded in the paper **in** random places at varying depths - **different on each page.**

See also: ➡ *Substrate without optical brightener*

See also:
➡ *Planchettes*
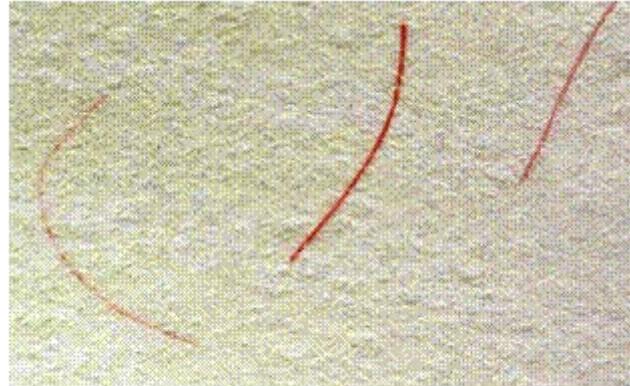
Red fibres in the paper substrate (using magnification)

Transmitted light (using magnification)

Normal light

Multi-coloured fibres

Sometimes coloured security fibres are also visible under **UV light:** ➡ *Fluorescent fibres:*

Multi-coloured fluorescent fibres
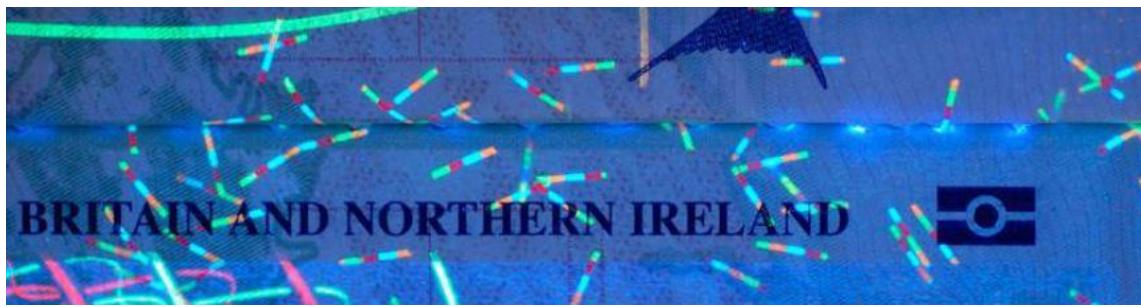
Security fibres are not to be confused with ➡ *synthetic fibres* (which contribute to the mechanical properties of the substrate).

⬆ **top**

Composite card (PET-PVC)

PVC

PVC

PET / Polyester

Additional film(s)

Additional film(s) may be applied
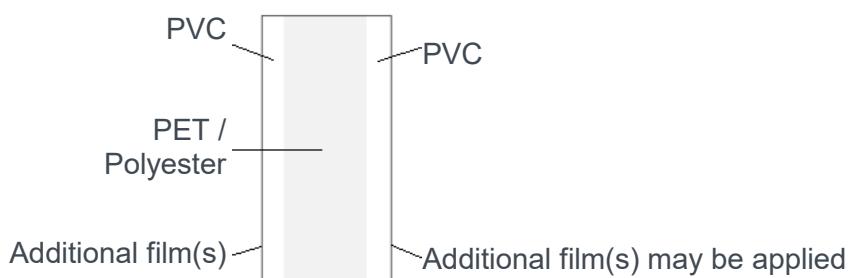
See also: ➡ *PVC (polyvinylchloride) card*
See also: ➡ *PC (polycarbonate)*

DID® - Diffractive Identification Device

Perform a 90° in-plane rotation: a clear colour switch is visible; the DID® contains two diffractive colours visible at direct reflection angle. This enables easy examination.

Different foil effects from other ➡ **DOVIDs** can be incorporated.

DID® Hologram.Industries

See: ➡ **OVD (Optically Variable Device)**

Document code

The **_document codes_** used in this database for **_AUTHENTIC (GENUINE) DOCUMENTS_** are made up of the following components:

> **For example: "FRA-AO-01001"** - this code consists of:

• **"FRA"** for **_France_**, the document country	= **_3-letter country code_**
• **"A"** for **_Passport_** (national passport)	= **_Document category_** *(left column)*
• **"O"** for **_Ordinary_**	= **_Document type_** *(right column)*
• **"01001"** (5 digits), of which the first two ("01")	= **_Document number_**
the last three digits ("001")	= **_Version number_**

The following documents are described in **PRADO:**

	Document categories*:		**_Document types**:_**
A	Passport	**O**	(ordinary document)
T	Travel document	**D**	diplomatic
E	Entry paper	**S**	service / official / special
I	Seafarers' identity document	**F**	military
B	Identity card	**P**	temporary / provisional / emergency
J	Travel document issued to non-nationals	**Y**	related / associated document
C	Visa (➡)		
H	Residence-related document		
F	Driving licence (➡)		
G	Vehicle licence/ log book		
*) **Document category** is an <u>obligatory</u> **field** in the **document code** of each document		**) **Document type** is <u>not</u> an obligatory part of the **document code**.	

*/.

		Document categories*:			Document types**:
	K	Train driving licence		O	(ordinary document)
	L	Crew member certificate / pilot's licence		P	temporary / provisional / emergency
	M	Certificate for operators of pleasure crafts / captain's licence			
	V	Authorisation to represent a company			
	W	Work permit			
	S	Special authorisation card			
	Q	Pet passport			
	X	Other document			
	P	Civil status/ other official document		C	Criminal/ police record / penal certificate
				V	Health/ vaccination certificate
				B	Birth
				N	Nationality / citizenship
				I	Social security card / tax card
				A	Adoption
				K	Civil status certificate
				L	Certificate of capacity to marry
				M	Marriage
				U	Registered partnership
				R	Divorce
				T	Death certificate
	D	Stamp		E	entry stamp
				X	exit stamp

*) **Document category** is an **obligatory** field in the **document code** of each document

) **Document type is **not** an obligatory part of the **document code**.

Driving licence

Driving licences as a rule can be used as *identity documents* only in the issuing country. They are not travel documents.

All driving licences issued within the European Economic Area (EEA) are mutually recognised. Validities are different from country to country and depend on the categories of vehicles and can depend on the age of the holder.

Numbering scheme:
1.   Surname of the holder
2.   Other name(s) of the holder
3.   Date and place of birth
4.   Issuing authority
4a.   Date of issue of the licence
4b.   Date of expiry of the licence
4c.   Name of the issuing authority
4d.   National (personal) identification number / …
(4e.) (Gender)
(4f.)   (Nationality / citizenship)
5.   Number of the licence
6.   Photograph of the holder
7.   Signature of the holder
8.   Permanent place of residence
9.   Category/categories of vehicle(s) the holder is entitled to drive

10.   Date of first issue of each category
11.   Date of expiry of each category
12.   Additional information / restrictions
(13.) (Additional information)
(14.) (Additional information)

See also: ➡ *Numbering*

Categories:

AM		Minimum age: 16 years
A1		Minimum age: 14 / 16 / 17 / 18 years
A2		Minimum age: 18 years
A		Minimum age: 18 / 20 / 21 / 22 years
B1		Minimum age: 16 / 18 years
B		Minimum age: (17) 18 years
C1		Minimum age: 18 years
C		Minimum age: (18) 21 years
D1		Minimum age: 21 years
D		Minimum age: (21) 24 years
E		Minimum age: 21 years
BE		Minimum age: 17 / 18 years
C1E		Minimum age: 18 years
CE		Minimum age: 21 years
D1E		Minimum age: 21 years
DE		Minimum age: 24 years

The above list is not exhaustive and only indicative.

See also: ➡ *Document category*

Embossing stamp

Tilt the page; look at the embossing under **NORMAL LIGHT** or under ➡ **oblique light**; feel the raised / lowered surface.

Embossing is an impression in relief made by means of a seal or stamp, e.g. to **authenticate** a document, or a conventionally fixed (e.g. glued) image of the holder in the document.

Authentication: See also:
See also: ➡ **Relief embossing**

See also: ➡ **Ink stamp**
See also: ➡ **Photograph of the holder - fixing methods**

See also: ➡ **Hot foil stamping**

Endless text

Endless text denotes repeated, sometimes unspaced, lines of text in the ➡ ***background / security printing*** or in a ➡ ***security thread.***

Endless text may be *positive text:*

or
reversed-out text:

Endless text can be normal print, ➡ *Miniprint,* or *microprint.*

Council of the European Union
General Secretariat

FADO

FADO (**F**alse and **A**uthentic **D**ocuments **O**nline) has been established pursuant to the Council Joint Action 98/700/JHA.

1. **Expert FADO,** an accredited system for the exchange of classified ("RESTREINT UE / EU RESTRICTED") information on false as well as genuine travel and identity documents between **document experts** which regularly meet in the Working Party on Frontiers - Mixed Committee in the formation of false documents experts.

2. The access restricted ➡ *iFADO (Intranet FADO)* system is the second level of **FADO.** It contains the most important information for document and identity checking, derived from **Expert FADO**. It is for governmental and law enforcement use.

3. The ➡ **PRADO** system contains a considerably further reduced set of information on authentic documents and is made available to the public by the General Secretariat of the Council of the EU (GSC) via **www.consilium.europa.eu/prado.**

The information is selected and provided by document experts in EU member states, Iceland, Norway and Switzerland.

The information in all three systems is currently available in 24 official languages of the European Union.

High quality and reliability

- Documents are introduced by document experts all over Europe.
- The information contained is validated by all participating document experts.
- Several quality assurance and validation steps assure consistent and highly standardised information.
- High-quality translations are performed automatically by the system, as well as by specialised translators in the GSC.

The **FADO** system family is hosted by the
Council of the European Union
General Secretariat
Directorate-General Justice and Home Affairs, Directorate Home Affairs (JAI.1).
Its technical implementation and maintenance is performed by GSC.SMART.1.D.

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Flexographic printing

Flexography is a **direct printing technique**, as is the (much more traditional) relief printing technique ➡ *letterpress printing.*

Thin sheets of, for example laser engraved, polymer material can be used as 'printing plates'. Water-based, solvent-based or UV hardening low-viscosity inks can be used.

Flexo printing is very flexible and can be used for printing on almost any kind of absorbent or non-absorbent substrate, including for example on laminates.

Flexo printing on ➡ **laminate**

Fluorescent fibres

Fibres with fluorescent properties become visible under ➡ *UV light*.

They are mixed into the paper pulp during the paper substrate manufacturing process, to serve as a security feature.

Fluorescent fibres show up **in <u>random</u> places at <u>varying depths</u> - different on each page.**
They may be **<u>visible</u>** under *NORMAL LIGHT* (➡ *coloured security fibres*) or **<u>invisible</u>** under *NORMAL LIGHT*.

Fluorescent fibres can show one or several colours under UV light

Invisible fibres (under normal light) fluoresce red, yellow & green under UV light
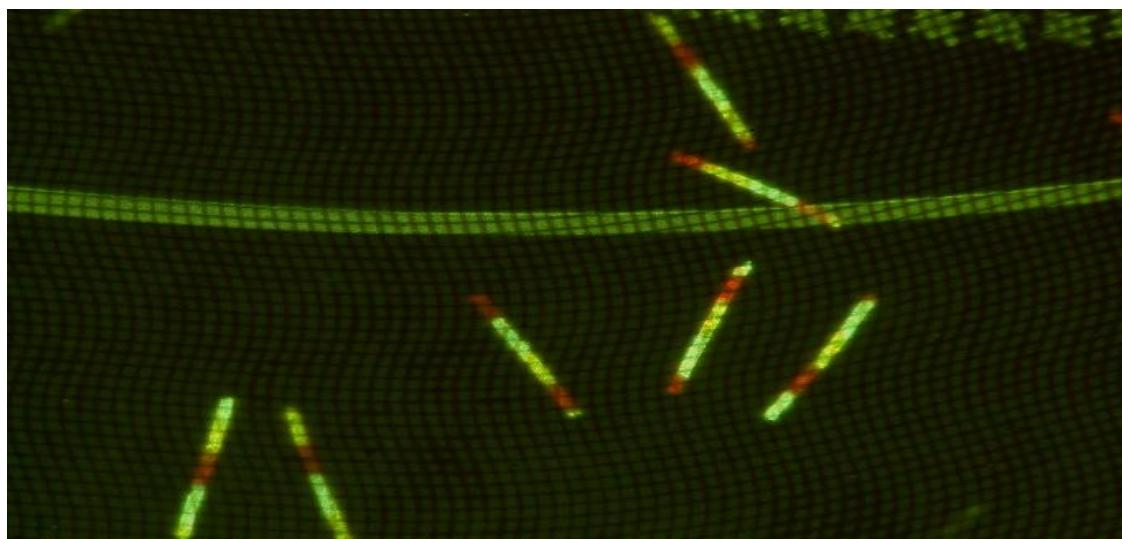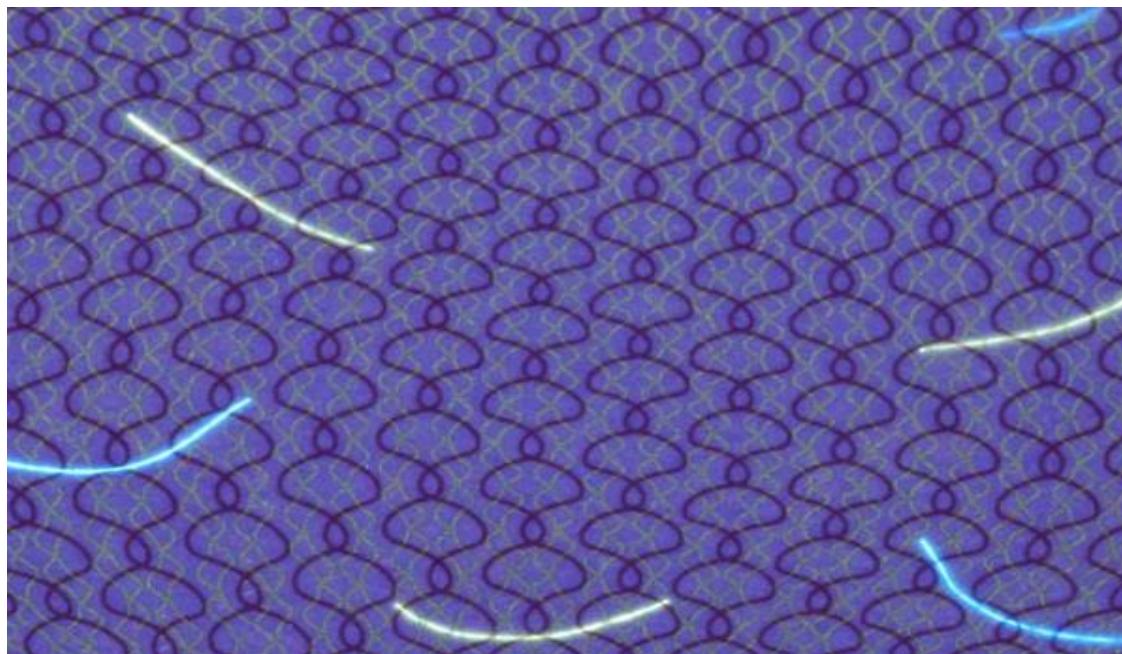
➡ *Fluorescent hi-lites*

➡️ *Fluorescent planchettes*

➡️ *Substrate without optical brightener*

Fluorescent hi-lites

Fluorescent hi-lites become visible under ➡️ *UV light*.

Fluorescent hi-lites are very small fluorescent particles in the substrate; they are mixed into the paper pulp during the paper substrate manufacturing process to serve as a security feature.
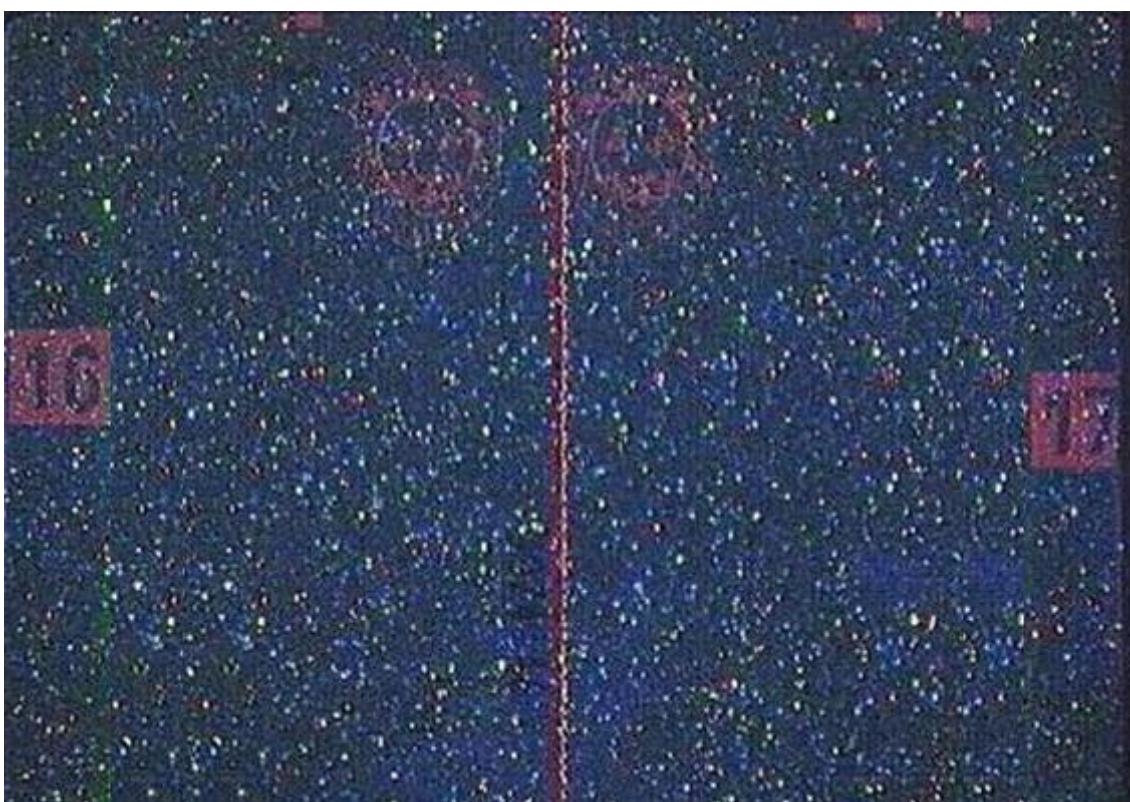
➡️ *Fluorescent fibres*
➡️ *Fluorescent planchettes*

➡️ *Substrate without optical brightener*

Fluorescent ink

Fluorescent ink is **visible under normal light and fluoresces under** ➡ *UV light.*

Fluorescent ink not only contains colour pigments, but also fluorescent substances (pigments); it is used to print both text and motifs.

Fluorescence is a short-lived light emission which ceases to glow practically immediately after the illuminating light source has been extinguished - within 10^{-8} seconds.

Background printing under normal light.

Same page under UV: - **fluorescent ink; the brown colour in the background printing fluoresces green.**

Not to be confused with ➡ *fluorescent overprint.*

See also: ➡ *Background / security printing*

Fluorescent overprint

051

Fluorescent overprint is <u>invisible</u>[(051)] **(colourless)** under ***NORMAL LIGHT***, but ***fluoresces*** (i.e. is visible) under ➡ ***UV light***.

Under normal light
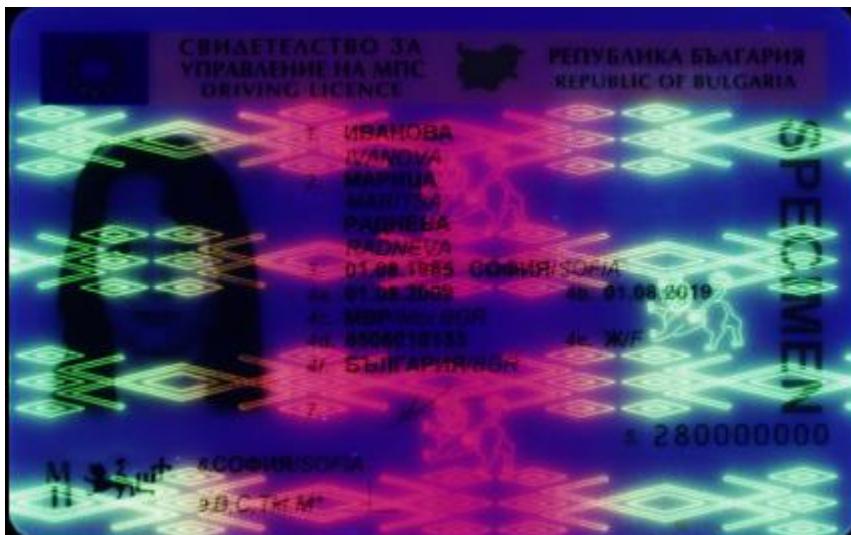
Under UV light

High resolution true colour
UV images on PC
(polycarbonate) documents:
True Vision
(365 nm)

**Fluorescent overprint
is only visible under UV light**

Not to be confused with ➡ *fluorescent ink*.

See also: ➡ *Laminate UV feature*

Fluorescent planchettes

Fluorescent planchettes are visible under ➡ *UV light*.

Fluorescent planchettes may be **either visible or invisible under *NORMAL LIGHT.***
➡ *Planchettes* (small coloured discs) with *fluorescent* properties are mixed into the paper pulp during the paper substrate manufacturing process to serve as a security feature.
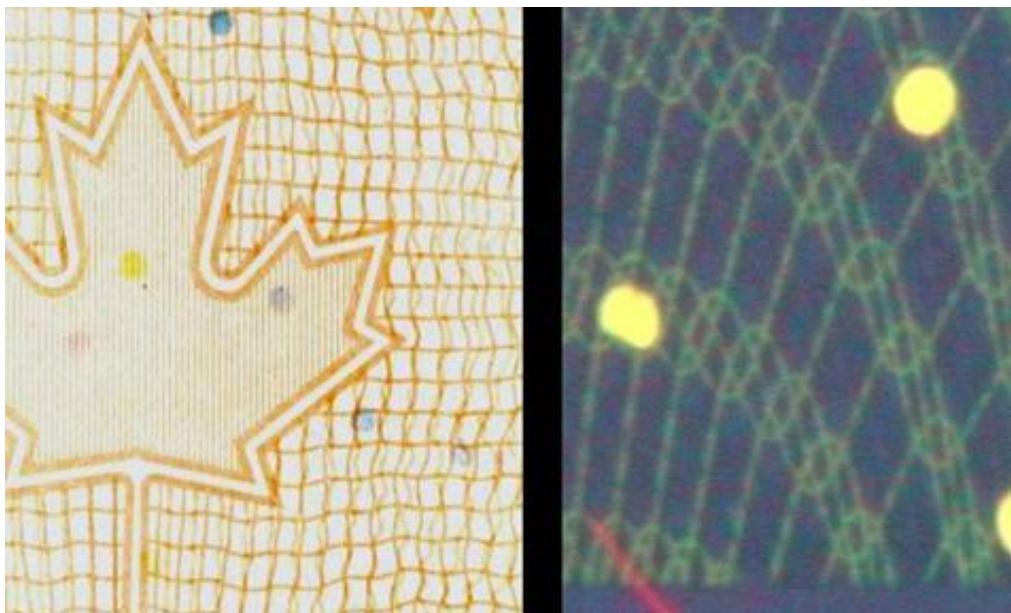
See also: ➡ *Fluorescent fibres*
See also: ➡ *Fluorescent hi-lites*

➡ *Substrate without optical brightener*

Fluorescent security thread

A *fluorescent security thread* fluoresces when exposed to ➡ *UV light*.

A thin strip of plastic, metallic, or other material is embedded or partially embedded in the substrate during the paper substrate manufacturing process. The reaction can also be multi-coloured.
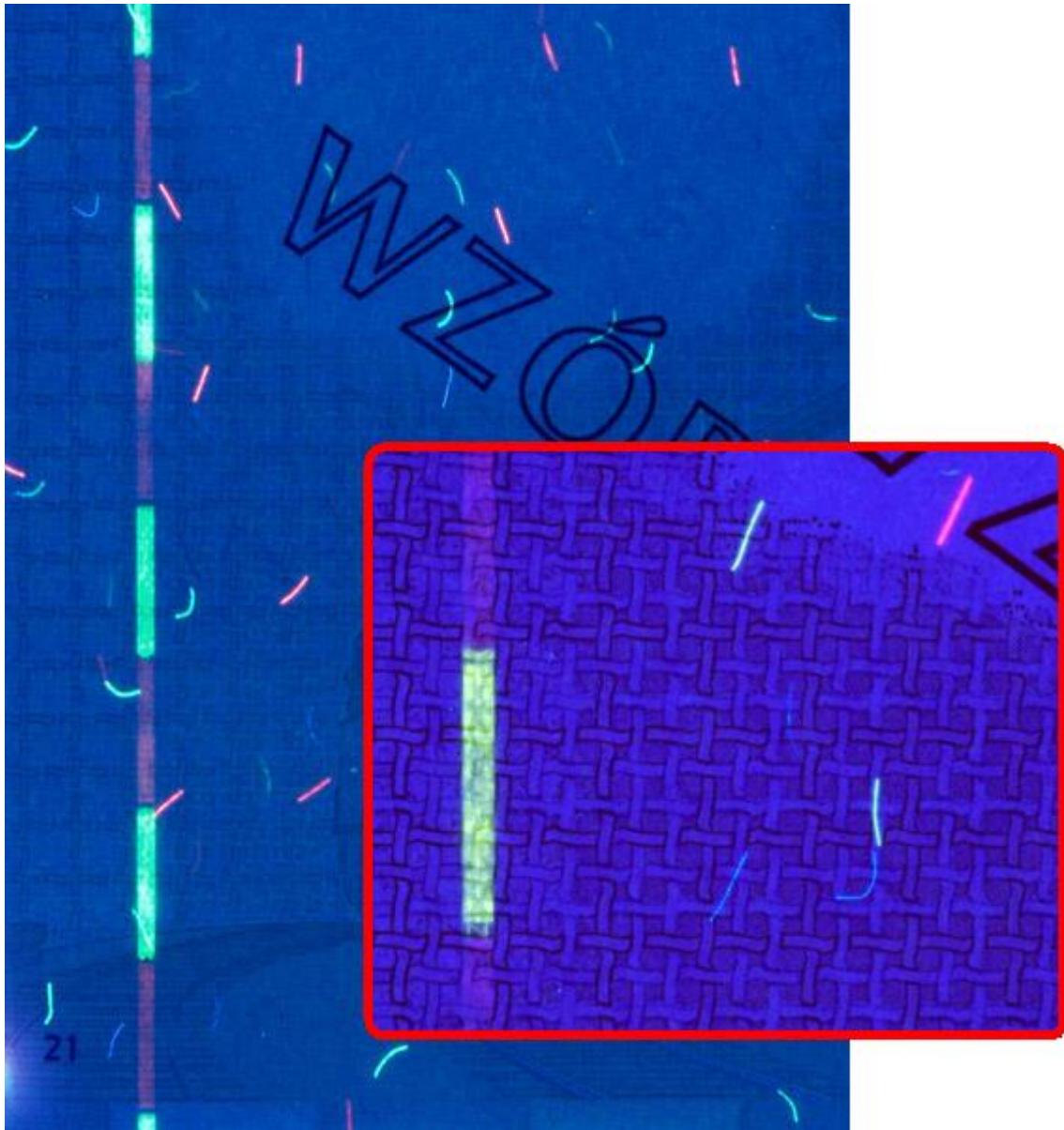
See also: ➡ *Security thread*

See: ➡ *Substrate*

Fluorescent serial number

A *fluorescent serial number* fluoresces when exposed to ➡ *UV light*.

A unique *document number* is printed on a document and assigned as an additional safeguard for identification.

See also: ➡ *Numbering*

Fluorescent stitching thread

A *fluorescent stitching thread* fluoresces in one or several colours when exposed to ➡ *UV light*.

The stitching thread is used for holding together the pages of a booklet; it can consist of one or several individual, interlaced, threads (reacting differently, also in different colours).

Under normal light

Under UV light
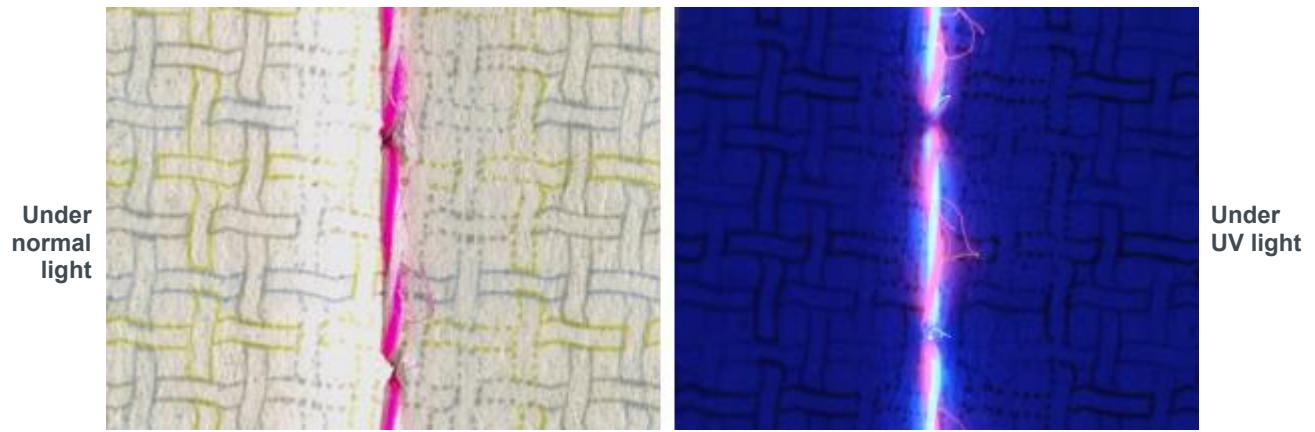
See also: ➡ *Stitching thread*

Fugitive ink

Look at the page under **NORMAL LIGHT**, eventually using a magnifying glass.

Fugitive ink is a type of **soluble ink** which dissolves in certain solvents or water; this ink causes specific parts of the security / background printing to disappear or bleach when exposed to solvents (for example when a forger tries to erase and alter personalisation text which is printed on top of it).
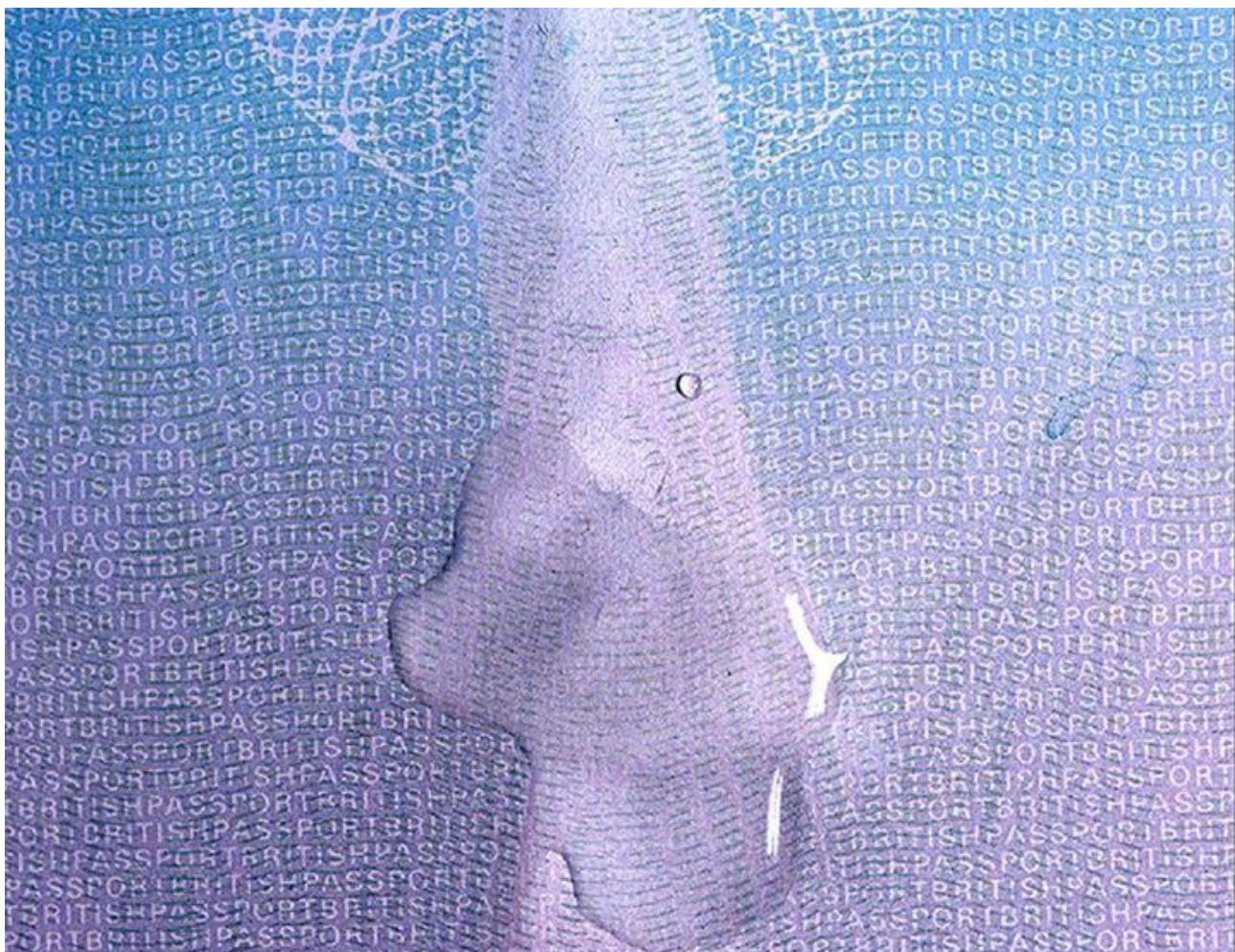
Not to be confused with ➡ *bleeding (penetrating) ink.*

Gravure printing

This printing technique, similar to ➡ *intaglio printing,* uses printing plates with recessed areas or cells which form the printed image.

The printing plate comes into direct contact with the substrate. The depth and size of the recessed cells determine the amount of ink that is transferred to the substrate. Very fluid and rapidly drying inks are used. This also allows inks to be printed on top of one another. The cell structure may sometimes be seen.
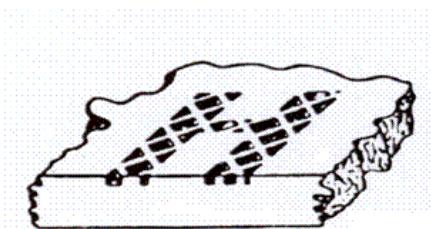
Gravure printing: printing form for text

In *security printing* the gravure printing technique is for example used for ➡ *laminate overprint*:
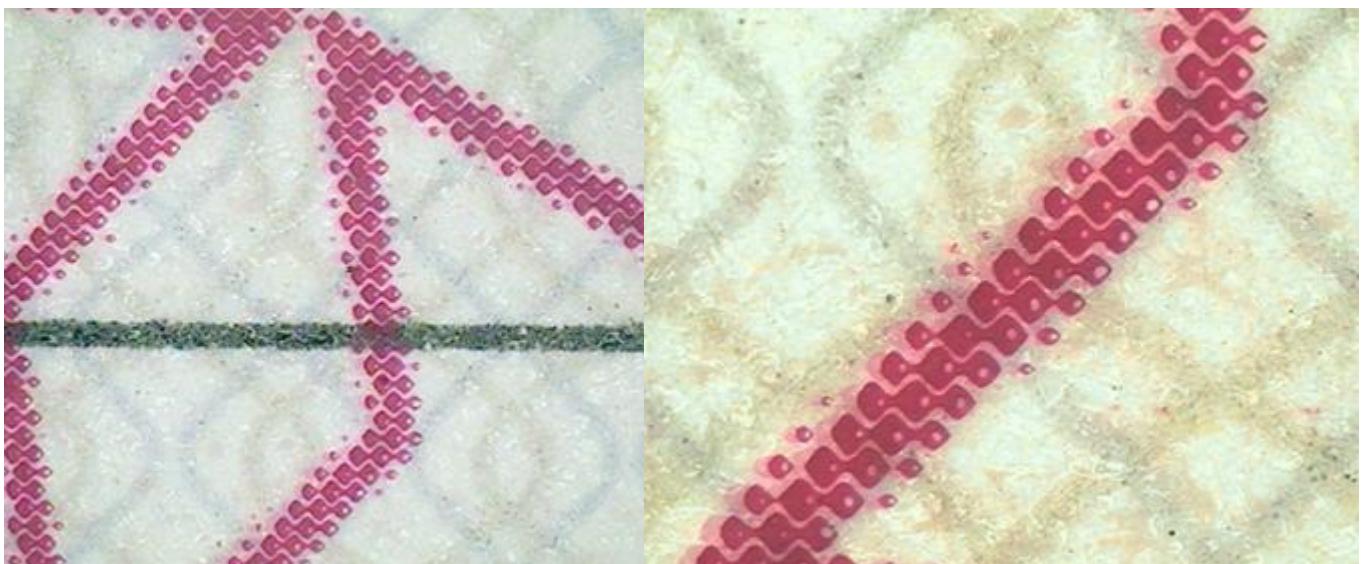
Close-up of laminate overprint

Guilloches / fine-line patterns

Fine (intricate) designs, consisting of interlaced continuous lines, are arranged in geometric patterns.

Security printing uses designs of *guilloches* or of *other fine-line patterns* with the aim of raising the barrier for re-origination and reproduction. Guilloches and other fine-line patterns are sometimes combined with ➡ *rainbow colouring*.
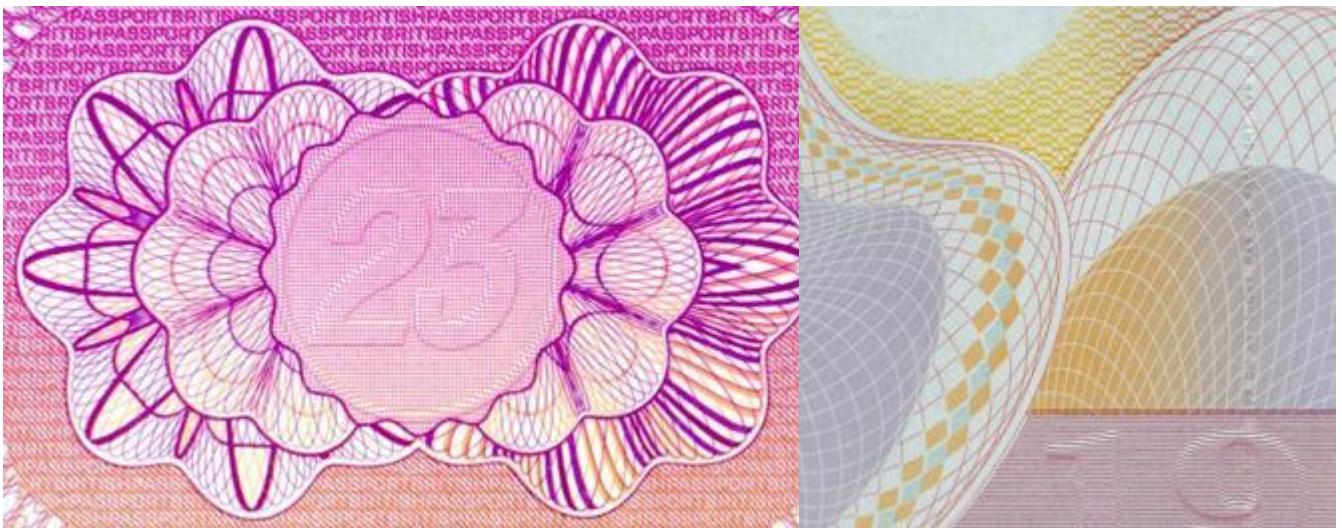
Positive and negative guilloche patterns

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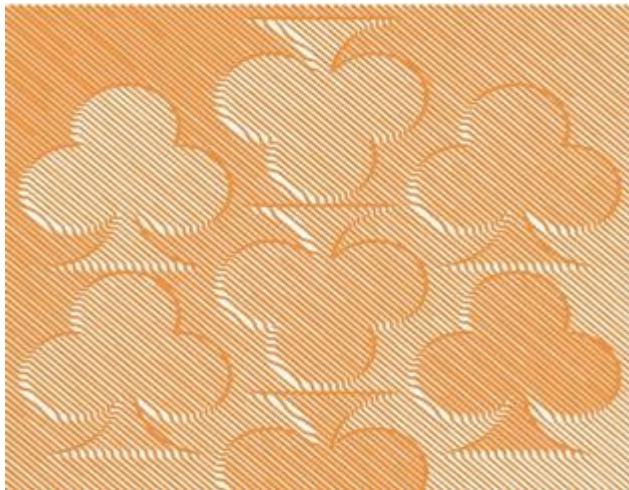
Relief fine-line patterns110

Hologram

Tilt the page; look at the hologram under **NORMAL LIGHT** or under ➡ **oblique light**.

The **hologram** is the most popular traditional type of ➡ **DOVID (Diffractive Optically Variable Image Device)** that is used as a security element. A number of effects are possible, e.g. 2D holograms (2-dimensional holograms) with structural and colour changes, 3D holograms with images, holograms with kinematic effects, etc.

2D hologram

3D hologram

➡ **OVD (Optically Variable Device)**

Hot foil stamping

Tilt the page; look at the slightly lowered / raised surface under **NORMAL LIGHT** or under ➡ **oblique light**.

Hot foil stamping involves the transfer of foil by means of a heated stamping die; it can be regarded as a form of ➡ **letterpress printing**.

The basic differences between hot foil stamping and letterpress are the use of stamping foil instead of viscous ink as the printing medium, and the indirect heating of the printing form. Due to the combined effect of temperature and pressure, a layer of foil is released from the carrier, at the points where the stamping die has raised areas, and is then transferred to the substrate in which it is permanently and indelibly embedded.

Hot foil stamping is often used to print text and motifs on passport covers -
for example **gold stamping** 019, or **silver stamping** 020.

Hot foil stamping is also used for the application of ➡ **holograms** and ➡ **kinegrams®,** etc.

Identigram®

Tilt the page; look at the *Identigram®* under *NORMAL LIGHT* or under ➡ *oblique light*.

The *Identigram®* is a *holographic security feature* used for example in passports and ID cards, combining several individual elements:

- a holographic facial image of the holder *(➡ secondary (ghost) image)*
- the ➡ *MRZ (Machine Readable Zone)*

and elements that are identical for all documents of the series, here, for example:

- the German eagle in 3D
- kinematic structures
- macroprint
- ➡ *microprint*
- ➡ *machine verifiable features.*

**Identigram®
(composed
image!)**

➡ *OVD (Optically Variable Device)*

Identity fraud and document fraud

Identity fraud and document fraud	
➡ Authentic (genuine) document	**False document**

Illegal use		Irregular use					
Imperso-nation	**Fraudulently obtained document**	**Expired document**	**Misused document**	**Forgery**	**Counterfeit**	**Pseudo document**	**Stolen blank (unlawfully personalised)**

Here PRADO information can help you detect fraud.
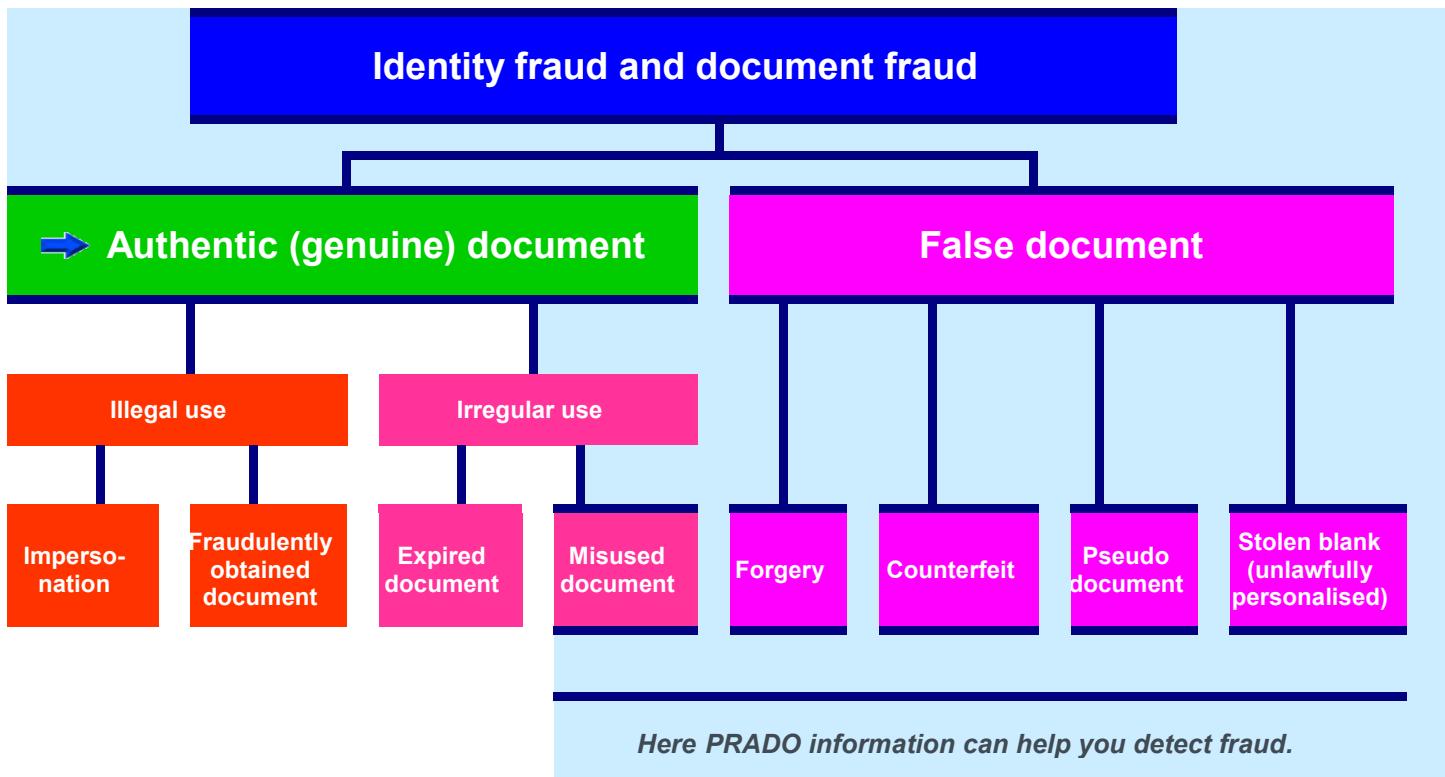
FRONTEX

This identity and document fraud model was adopted by the EUROPEAN UNION DOCUMENT-FRAUD Risk Analysis Network (EDF-ARA 2012 Ref R023) and is also used by FRONTEX.

Impersonation: A person - the **impostor** - practises deception under an assumed character, identity or name. Impostors always use genuine documents, so **imposture**, or **impersonation** for example also applies to an authentic passport containing a false visa or stamp, or to a genuine visa in a forged passport.

Fraudulently obtained document: This generic term covers both authentic documents applied for on the basis of fraudulent source documents, as well as fraudulently issued authentic documents.

Expired document: See expiry date ("Valid until") in the document. → Then check if the document is, under applicable law, still valid for the purpose for which it is being used?

Misused document: Includes suspected misuse - for example, a student visa is used for immigration, but the immigrating holder intends from the outset to work in the target country; this section of irregularly used documents also covers, if for example a short term residence permit is used instead of a visa, while only the holder of the type of permit "LONG-TERM RESIDENT - EC", a long-term resident's EC residence permit (Council Directive 2003/109/EC), or for example the

holder of a diplomatic residence card, can lawfully use this type of permit instead of a visa (if a visa is required).

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Council of the European Union
General Secretariat

İFADO

İntranet False and Authentic Documents Online

iFADO, the "second level" of **FADO**, contains only unclassified, but circulation-restricted, information. The documents are not intended for the general public, but are labelled "**LIMITE/LIMITED – FOR CONTROL AUTHORITY USE ONLY**".

The **target audience** consists of all national and European authorities and law-enforcement agencies involved in checking identities.

If you check identities, you also have to check identity and travel documents.

See: ➡ Identity fraud and document fraud

To be able to do so, you have to know what the document should look like; in addition to the technical specifications (including security features) of authentic documents, *iFADO* informs you on the most common detection points for false documents.

→ *When examining a document it is important to know its technical details.*

iFADO is intended to help raise awareness and ascertain the authenticity of documents; doubts can then be followed up by document experts. *National contact points* *(document experts and others) are provided in **iFADO**.*

iFADO also contains information on typical forgeries and forgery techniques as well as guidelines on the detection of identity fraud.

iFADO contains the most important information on the validity and on other legal aspects of documents, as well as technical descriptions (including descriptions of the most important security features). Authentic travel documents and other identity documents, visas, stamps and some civil

status documents of the member states of the European Union and of many non-EU countries are described.

As *iFADO* describes **specimens** of genuine travel documents, visas and stamps, as well as **typical instances** of falsifications (**with anonymised personal data**), there is no overlap between *iFADO* and, for instance, SIS.

iFADO information comes from the classified "RESTREINT UE / EU RESTRICTED" **Expert FADO** system. The information contained in *iFADO* is selected and provided by document experts in EU member states, Iceland, Norway and Switzerland (➡️ **Expert FADO** partners). The steering committee in the Council of the EU is the Working Party on Frontiers/False Documents.

iFADO is hosted by the General Secretariat of the Council of the EU (GSC), in the Directorate-General for Justice and Home Affairs (JAI). Technical implementation and maintenance are the responsibility of GSC.SMART.1.D.

In addition to the central system and central access point (the central proxy), which are hosted by the GSC, national proxy servers have been set up and are operated by several **FADO** partners; this ensures faster and easier access for governmental and law-enforcement users in these countries.

Target audience

National authorities involved in checking identities and identity and travel documents, and other European persons and bodies applying legislation/law-enforcement agencies, including for example:
- Border guards
- Embassies and Consulates
- Police
- Social security agencies
- Europol
- FRONTEX

Most of the text entries in *iFADO* documents are standardised descriptions which are translated automatically into the currently supported 24 official languages of the EU. Thus immediate availability as well as a high degree of standardisation is assured. Free-text descriptions are translated by specialised linguists in the GSC.

Mission

The main aim of *iFADO* is to provide information to national authorities that (are required to) check identities. *iFADO* is intended to help raise awareness and ascertain the authenticity of documents; doubts can then be followed up by document experts.

Motivation

Information on identity and travel documents and typical forgeries is not only relevant in the context of irregular and illegal immigration, but it is also important when dealing with all forms of organised crime, such as terrorism, drugs trafficking, arms smuggling and human trafficking. *iFADO* thus constitutes a significant tool in combating these phenomena, which are of concern to EU member

states, thereby helping to create a secure environment and to further the development of Europe as an area of peace, security and stability in the world.

Further proceedings in practice

Irrespective of a document's origin, questions (including on particulars of foreign documents) are to be addressed to the respective National Contact Point for Identity and Travel Documents (contact details are available via the homepage of *iFADO*) by *iFADO* users.

For authorised personnel, access is always possible via the central proxy server in the GSC, and in some countries in addition via national proxy servers (intranet/national governmental networks).

Management of the end-user accounts and provision of end-user support are <u>always</u> the responsibility of the national authorities.

Access information, how to get an *iFADO* account:
http://www.consilium.europa.eu/ifado/ifadocontacts.htm

See also: ➡ **FADO**
See also: ➡ **PRADO**

Image (printing) containing invisible personal information (IPI) or scrambled document related information

This information is invisible to the human eye as it is printed in "scrambled" format; it can only be seen using a special decoder lens, a special viewer, or special technical equipment (including scanner or camera and image processing software).

Special software tools are used to encode a non-visible image in a visible image (in the printing). For example

- individual information such as the passport number, or personalisation information like the holder's name, is invisibly embedded e.g. in the photograph of the holder (***IPI - Invisible Personal Information***), or

- document -related (static) information, such as e.g. the country name, is embedded in the ➡ ***background / security printing*** of travel documents (***invisible "scrambled" information***).
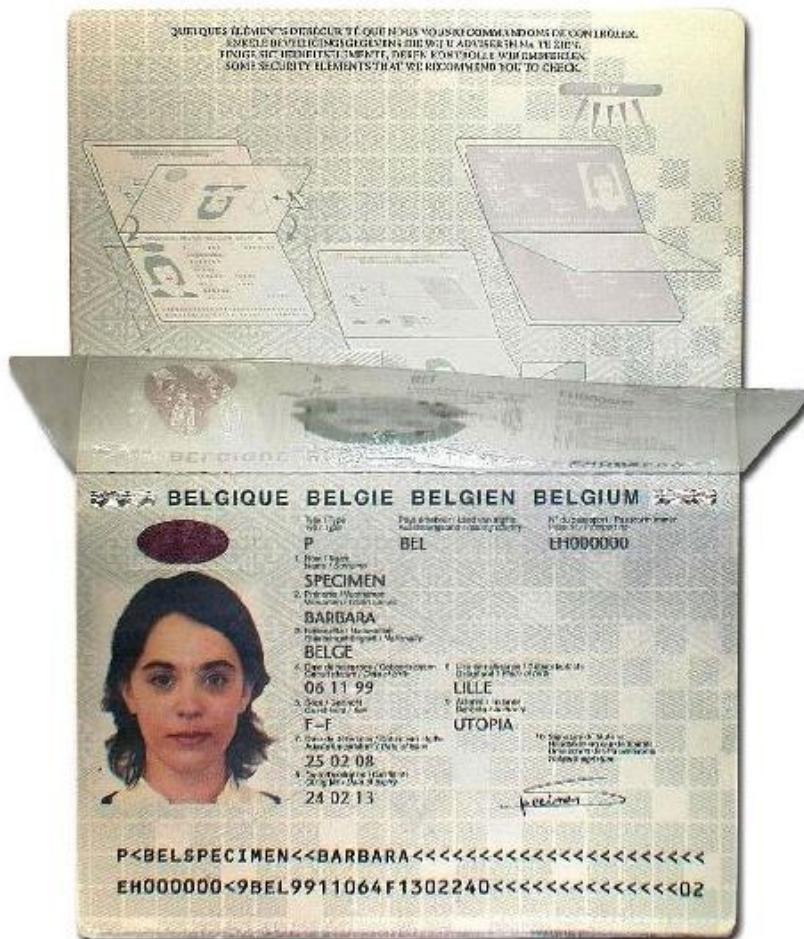
Here a transparent plastic card is integrated in the passport (!) before the biodata page, which includes a decoder lens that fits over the facial image to reveal the Invisible Personal Information (IPI)

Not to be confused with ➡ *latent image*, or with ➡ *tilting effect*.

Inkjet printing

Inkjet printing is a printing technique using a type of computer printer that operates by propelling tiny droplets of liquid ink directly onto the substrate, whereupon the ink penetrates the substrate. It can e.g. be used for ➡ *biodata / photo / signature integration.*

Ink nozzle

Heating or piezo element

Ink cartridge

Printing substrate (paper)
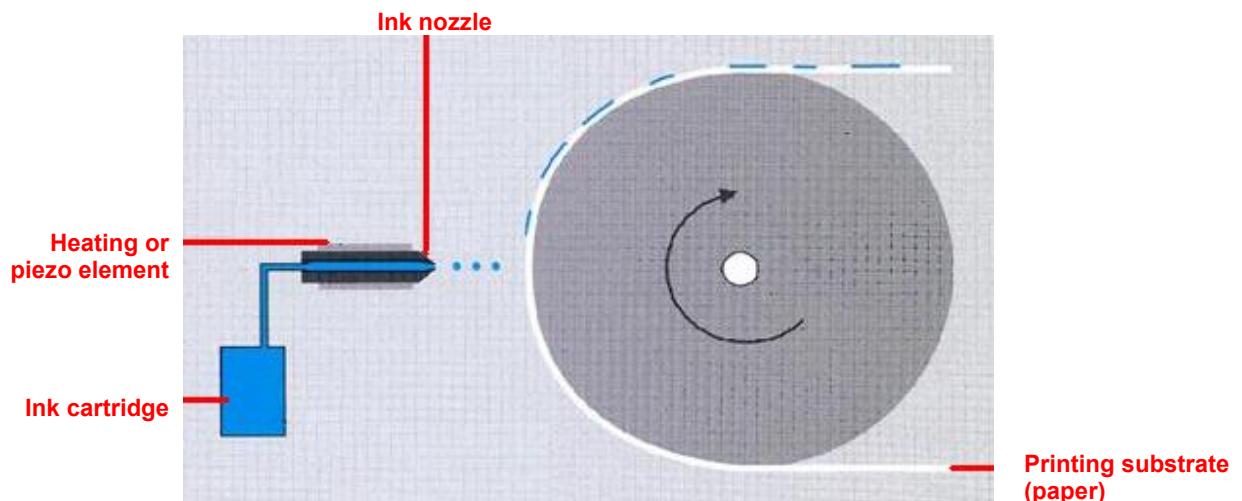
Biodata / photo integration using inkjet printing technique
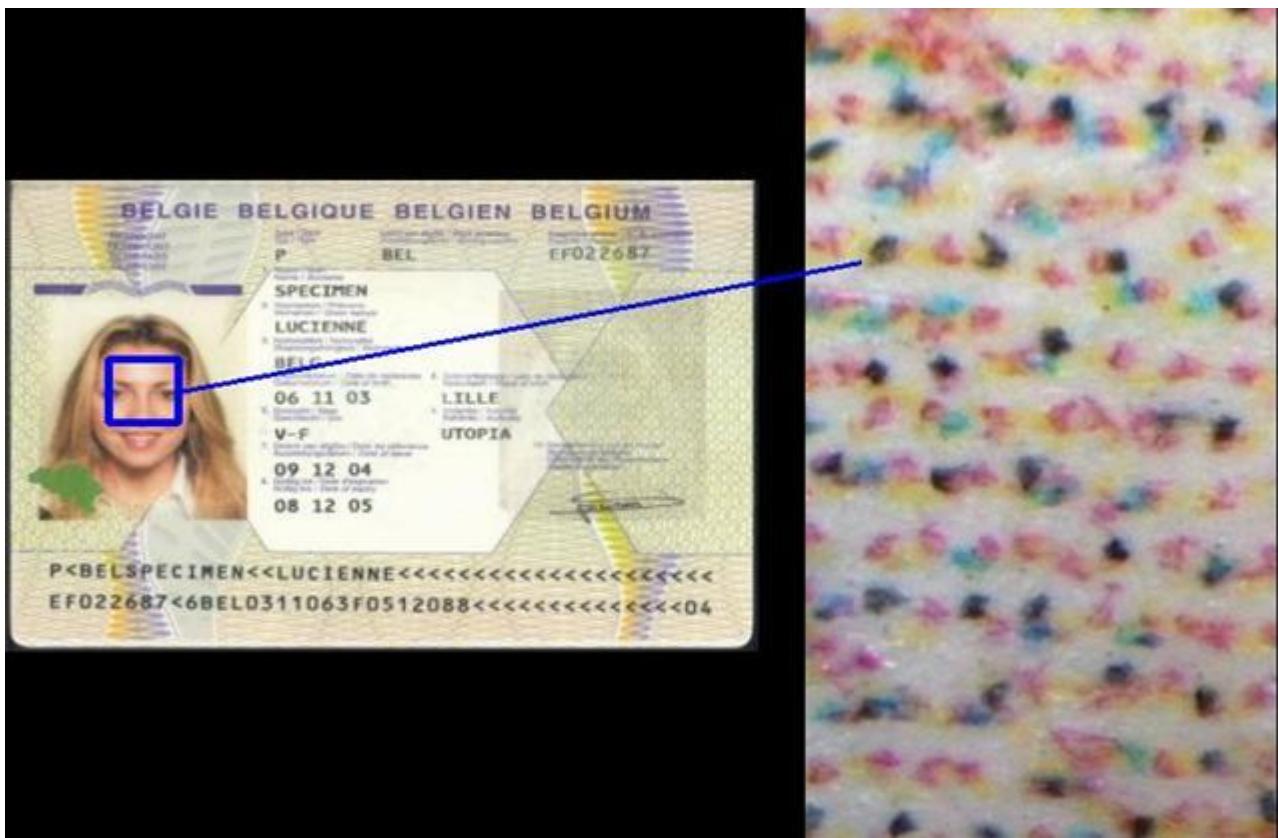
Biodata & photo integration with inkjet printing

Inkjet printing colour personalisation inside a polycarbonate card:
Using special polycarbonate ink, personal data is printed on a PC layer in the course of the production process of the ➡ *PC (polycarbonate) card,*
e.g. *Innosec Fusion, Polycore®, or PCP® (Polycarbonate Colour Personalisation)*.

Photo integration within the polycarbonate card (Innosec Fusion process)

PCP® (Polycarbonate Colour Personalisation) technology

Intaglio printing

Using intaglio printing, a **raised tactile relief is produced** (a *tactile feature*), which can also be recognised under ➡ *oblique light.*
This characteristic of intaglio printing is also suitable for the effect of ➡ *latent images.*

Intaglio printing is a printing technique whereby the image to be printed is etched or engraved in the surface of a printing plate. First, a thick and highly pigmented ink is applied to the printing plate, then the non-printing (non-recessed) areas of the surface are wiped clear of ink. Finally, the ink that remains in the engraved parts of the printing plate (the image to be printed) is transferred to the substrate under high pressure. The pressure forces the substrate into the recessed areas of the printing plate.
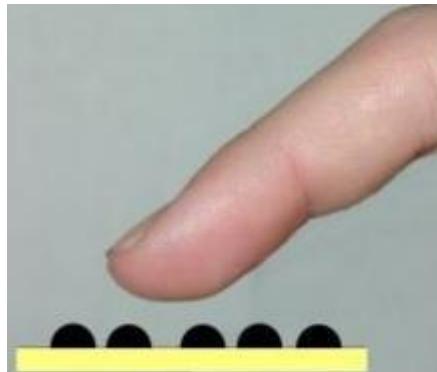
Raised (=relief) surface

Oblique light casting shadows

Not to be confused with ➡️ *gravure printing.*

Not to be confused with *PEAK*® - a technology combining offset and intaglio printing: colour (or other) changes are visible depending on the angle of view and the angle of incidence of light.

Not to be confused with ➡️ *raised (tactile) laser engraving* in plastic laminates or cards.

Intaglio printing without using ink leads to paper deformation and can thus be used to produce an embossing effect produced by the lithographic process. It is also possible to produce inkless latent image effects using *blind intaglio (intaglio embossing).*
➡️ *Schablon (stencil) multiple colouring process*

Iridescent ink

Tilt the page. Look at iridescent ink under **NORMAL LIGHT** or under ➡ *oblique light.*

Iridescent inks in general, as for example ***pearl inks, pearl lustre inks***, or ***mother-of-pearl inks***, contain semi-transparent pigments consisting of a thin film containing tiny mica flakes. They cause interference with the incident light. This creates shiny, pearl-like shimmering effects which become visible / invisible or change colour <u>when the angle of view or illumination changes</u>.

See also: ➡ *Iridescent laminate*

Iridescent laminate

Tilt the page; look at the laminate under **NORMAL LIGHT** or under ➡ *oblique light*.

An *Iridescent laminate* shows iridescent - shiny, pearl-like effects with change in colour **when the angle of view or the illumination changes.**
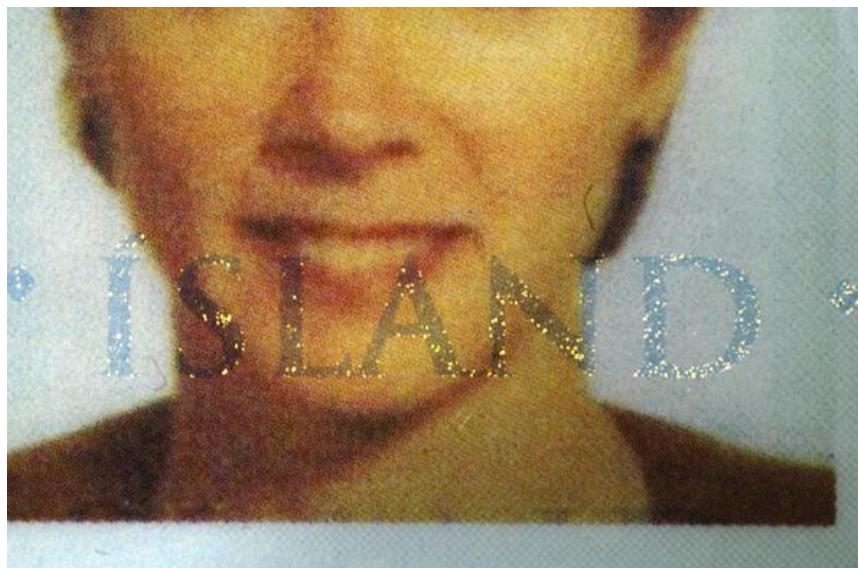
See also: ➡ *Iridescent ink*
See also: ➡ *Laminate*
See also: ➡ *OVD (Optically Variable Device)*

Kinegram®

Tilt the page to observe different 2D images. Look at the Kinegram® under **NORMAL LIGHT** or under ➡ *oblique light*;

The **Kinegram®** is a computer-generated hologram (➡ **DOVID)** capable of producing multiple high-resolution images. It contains special types of computer-generated diffractive optical elements. These can be designed in different ways to exhibit **kinematic, colour changing, contrast reversal** and **other special effects.**

Transparent Kinegram®

Kinegram®
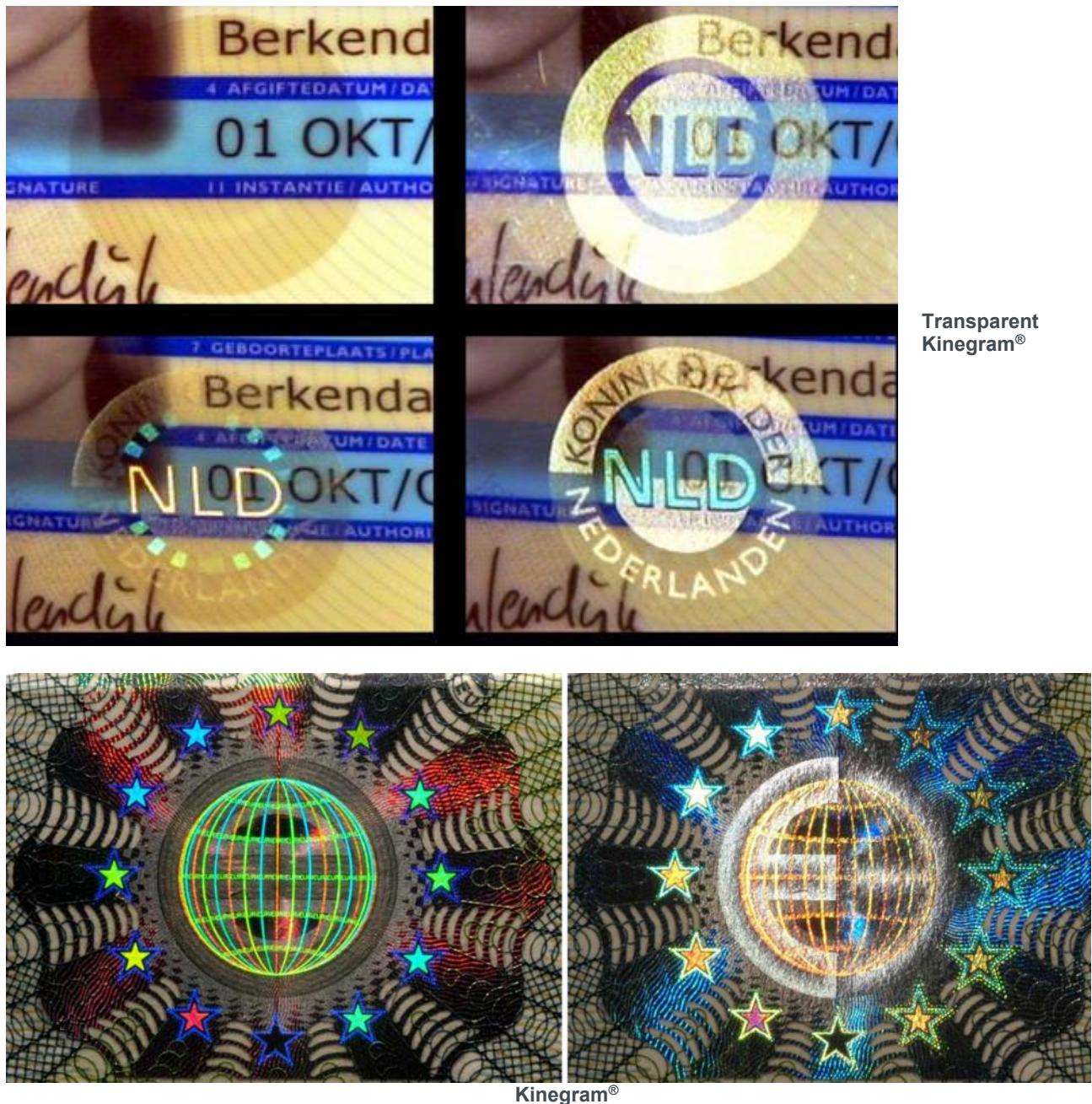
Partially de-metallised Kinegram®

Metallised Kinegram®

See also: ➡ *OVD (Optically Variable Device)*

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Laminate

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A *security laminating film* is a *foil* affixed to the document or biodata page as an *additional safeguard* by means of:

- pressure: *cold-applied laminate*

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- and / or heat: *heat-applied laminate (heat-sealed laminate)*

in order to better protect data entries against falsification.

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Security laminates often incorporate specific security features like tactile elements and ➡ *DOVIDs (diffractive optically variable image devices)*, which are usually not freely available on the market.

Examples: *Sealys Secure Surface, CFI (*colour floating image*) laminate, TKO (*transparent Kinegram® overlay*) foil, Kinefilm®* - heat-applied laminate with integral ➡ *Kinegram®* patch, existing in both metallised and transparent versions.

Laminates can contain ➡ *deliberately incorporated (designed) weak points*.

Ultra-thin to *thick laminates* are used.

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• Laminate overprint

Laminate overprint is a security element which tends to be printed on the reverse (=inner) side of the laminate, or between the layer of the adhesive and the laminate. This protects against wear and tampering. Laminate overprint can be visible or invisible under normal light: See: ➡ *Laminate UV feature.*

Laminate overprints tend to be printed using ➡ *screen printing,* ➡ *gravure printing,* or ➡ *flexographic printing*.

PASZPORT/PA
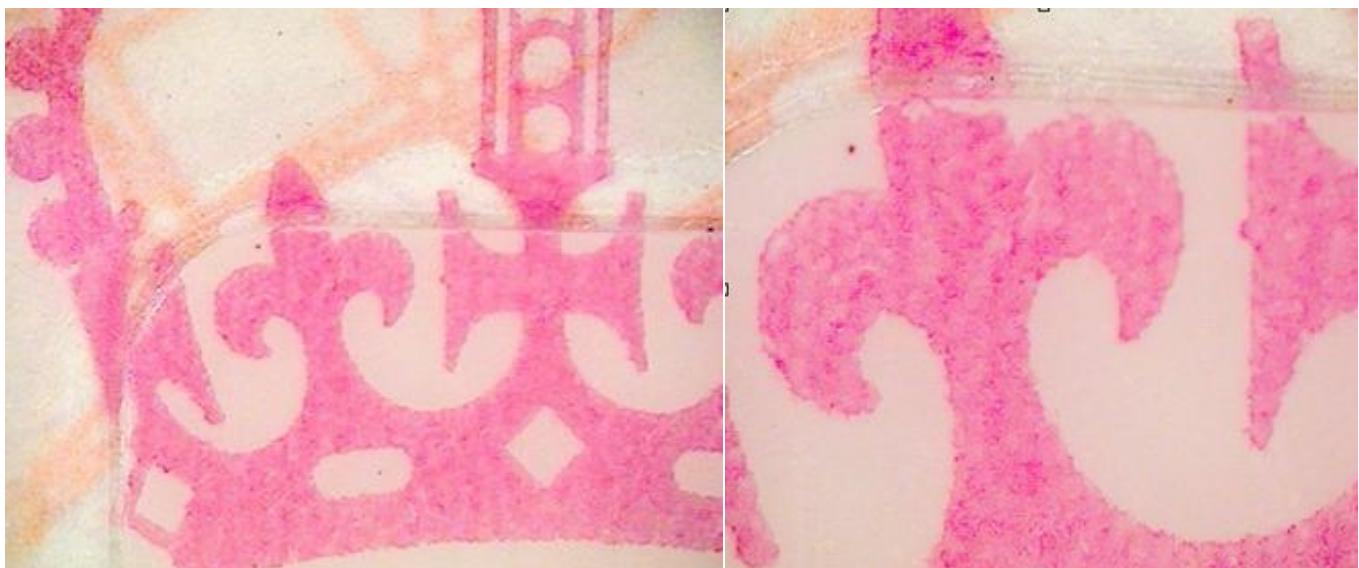
• **Laminate embossing**

Tilt the page; look at the embossing under **NORMAL LIGHT** or under ➡ *oblique light*; feel the raised / lowered surface.

Laminate embossing are tactile features such as intricate designs of *fine-line patterns* or *microprint* which are incorporated into security laminates by embossing.

Light source: ➡ *oblique light*

Laminate embossing - visual and tactile elements with light reflection and movement effects

Laminate embossing with microprint

See also: ➡ *Relief embossing*

• **Laminate integrated by binding**

In many passports with traditional biodata pages the holder's image and the biodata are safeguarded with a transparent laminate. In order to complicate manipulation, the *laminate* can be *integrated* in the *passport booklet by binding*. This will typically leave a strip of laminate forming a narrow margin on the facing page towards the back of the document:
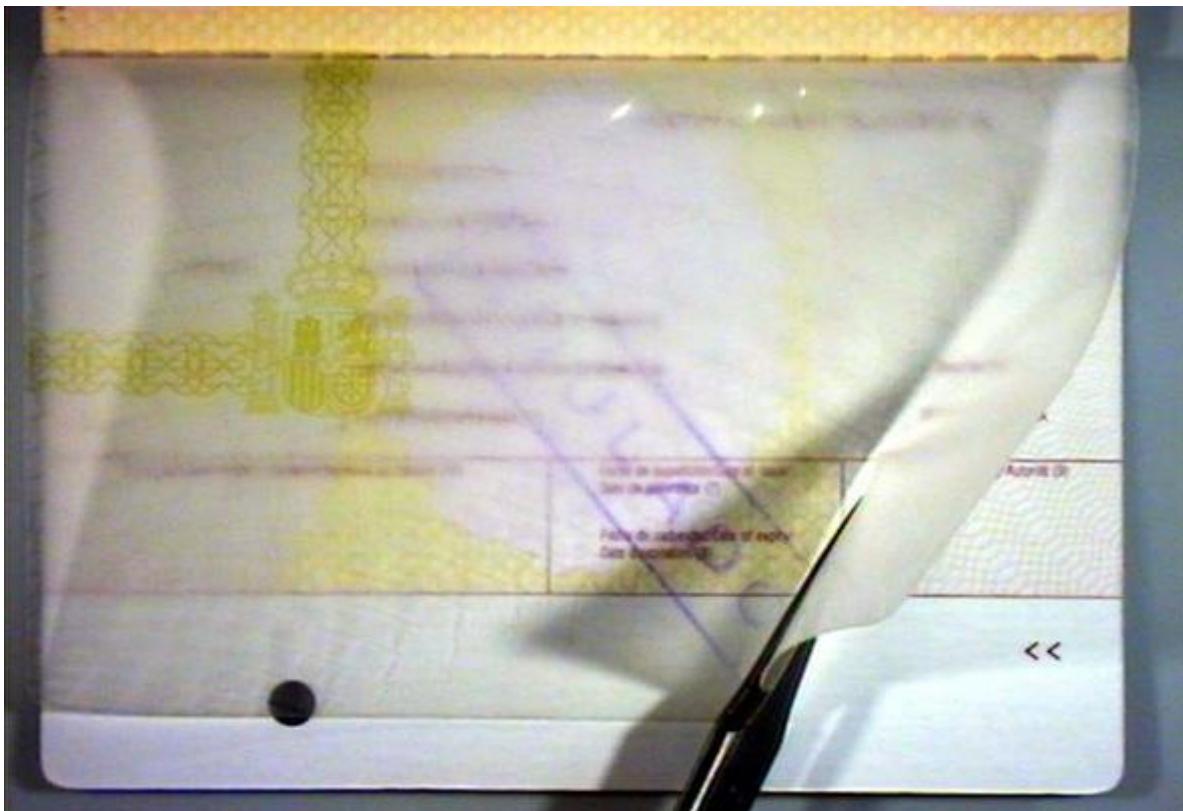
Laminate integrated by binding, forming a margin on the facing page

See also: ➡ ***Binding***
See also: ➡ ***Laminate UV feature***

Laminate UV feature

Either ➡ *fluorescent ink* (ink which is visible under normal light),

Fluorescent overprint

or ➡ *fluorescent overprint* (invisible under normal light) form printed security elements on the laminate; they tend to be placed on the reverse (=inner) side of the laminate, or between the layer of adhesive and the laminate. This protects against wear and tampering.

Laminate UV feature: multi-coloured fluorescent overprint

See also: ➡ *Laminate*
See also: ➡ *Laminate overprint*

Laser engraving

Pictures and text are engraved in plastic laminates or cards by means of a laser. In the *laser engraving* process the data are written by **blackening** (carbonising) laser-sensitive foils (➡ *PVC* or sensitised ➡ *PC*). Using different photo-sensitive materials, also colours can be obtained.

The depth of the laser effects can be deliberately targeted; several technical variations are in use:

- **Internal (layer-specific) engraving**: blackening in underlying layers through transparent (non-laser-sensitive) cover foils, like e.g. in
    - Germany: driving licence (given name, date and place of issue, signature):
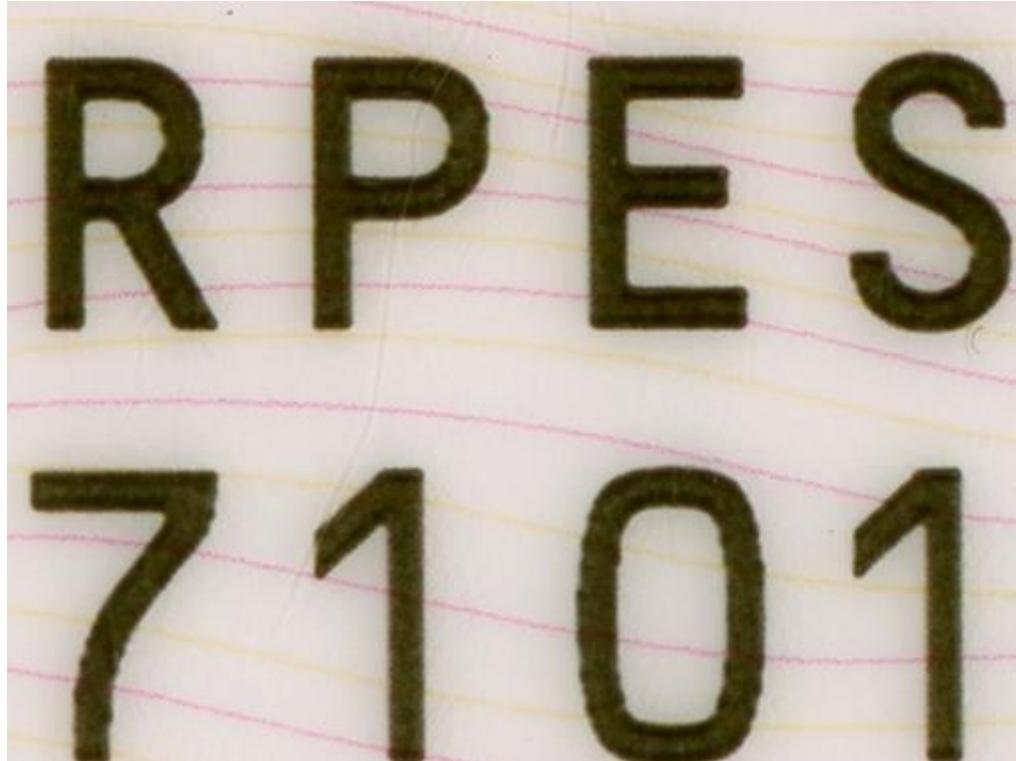
- **Laser engraved markings on the edge of a polycarbonate card**, e.g. the laser engraved number on the top edge of the Netherlands Driving licence: **'Sealys Edge Sealer':**

- **Raised (tactile) laser engraving**

Tactile laser engraving of the numbering

Tactile laser engraving of the date of birth

Not to be confused with raised (tactile) ➡️ *Intaglio printing* on traditional substrates.

See also: ➡️ *Variable laser image*

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Laser perforation

Using laser technology, **perforations** of different types and sizes can be produced:

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• Laser-perforated serial number

The ID document **serial number** is perforated through the substrate with a laser.
Typical distinguishing marks are produced:

- traces of burning round the edges of the holes
- no raised edges round the holes in the substrate (paper) on the back of the perforations
- conical decrease in size of the perforated holes in the booklet document when viewed from front to back
- can have <u>different shapes</u>:
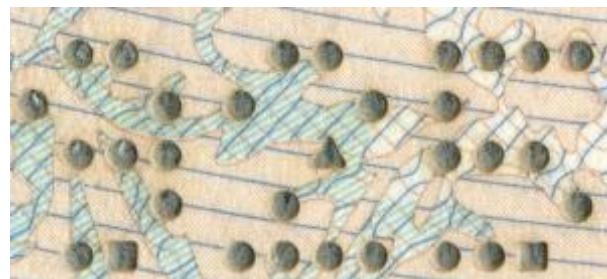
First page of a booklet document
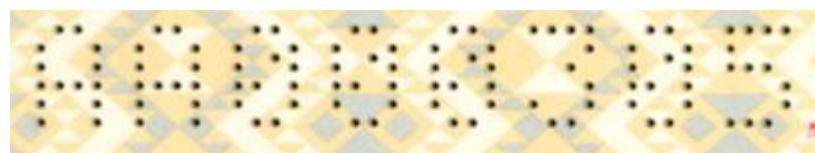
Last page of the same booklet document
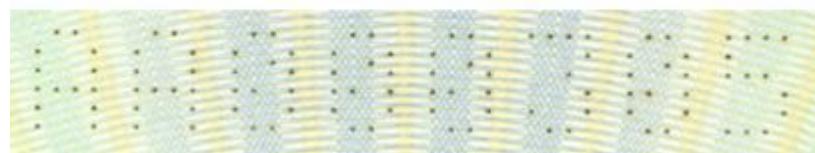
Not to be confused with ➡ **needle perforation.**

See also: ➡ **Numbering**
See also: ➡ **Secondary (ghost) image**

- **Laser-perforated fine structures and designs (rip cuts)**
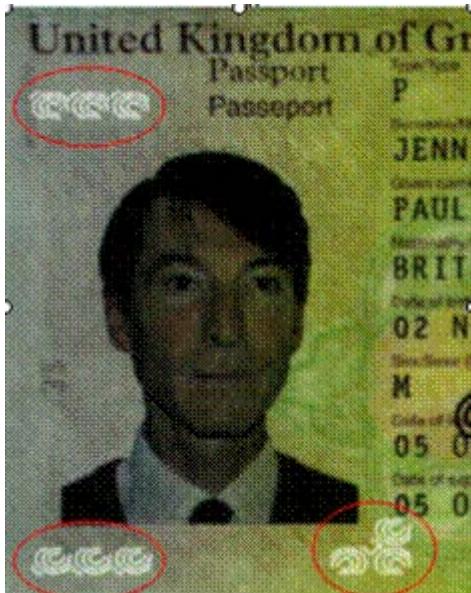
Laser-perforated structures/designs: Destri Perf®

Laser-perforated fine structures and designs (rip cuts) are *designed to be* (deliberately incorporated) *weak points*.

See also ➡ *Rip cuts (designed weak points)*

• Secondary (ghost) image - laser-perforated

Perforation is forming a secondary image of the document holder visible by transmitted light. Examples include: *Image Perf*®, Netherlands and Belgian passports.

Laser-perforated secondary (ghost) image

See also: ➡ *Secondary (ghost) image*

● **Laser perforation with** ➡ *tilting effect*

The individual letters of the *TLI ® (Tilted Laser Image)* are perforated at different angles. Thus the image that can be seen by transmitted light changes depending on the angle of view.

**ImagePerf ®
with TLI ®
(Tilted Laser Image)
in the form of the
letters NLD**

Laser print/ copy

A *laser printer* is a type of *digital printer* that uses electro-photographic processes.

Images are transferred to the substrate using *toner* as in the case of conventional photocopiers.

Laser printing is a possible integration technique for ➡ *biodata / photo / signature integration.*
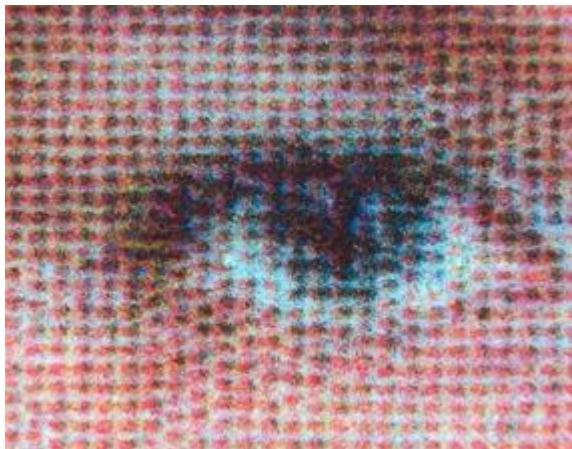
Biodata & photo integration technique: laser printing

MRZ - integration technique: laser printing

Latent image

Intaglio-printed motif, visible when tilted and viewed under **oblique light.** Depending on the angle of the **oblique light**, the image appears light against a darker background or vice versa.
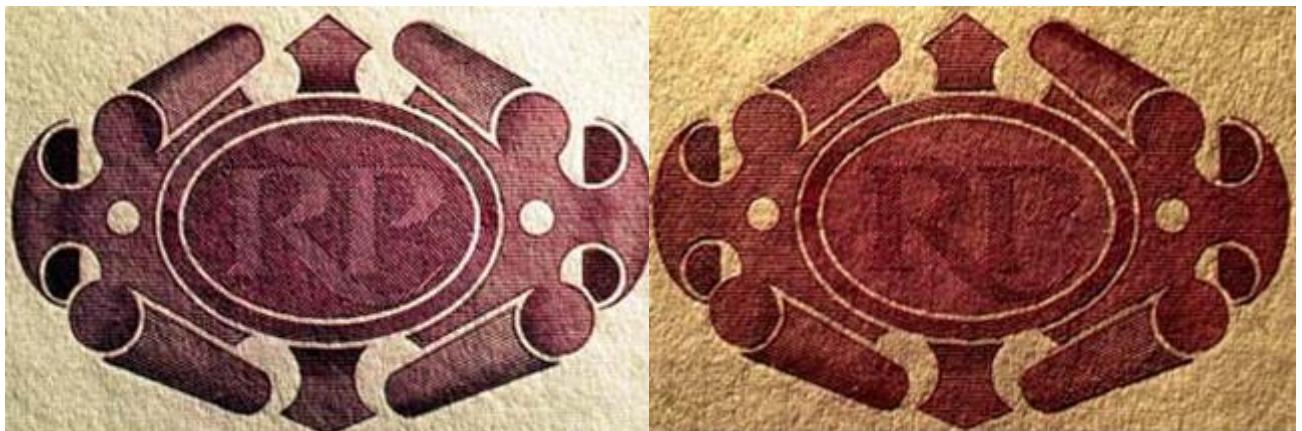
Depending on the angle of the oblique light "RP" is visible in a light or dark colour

Line structure (90º) of the latent image
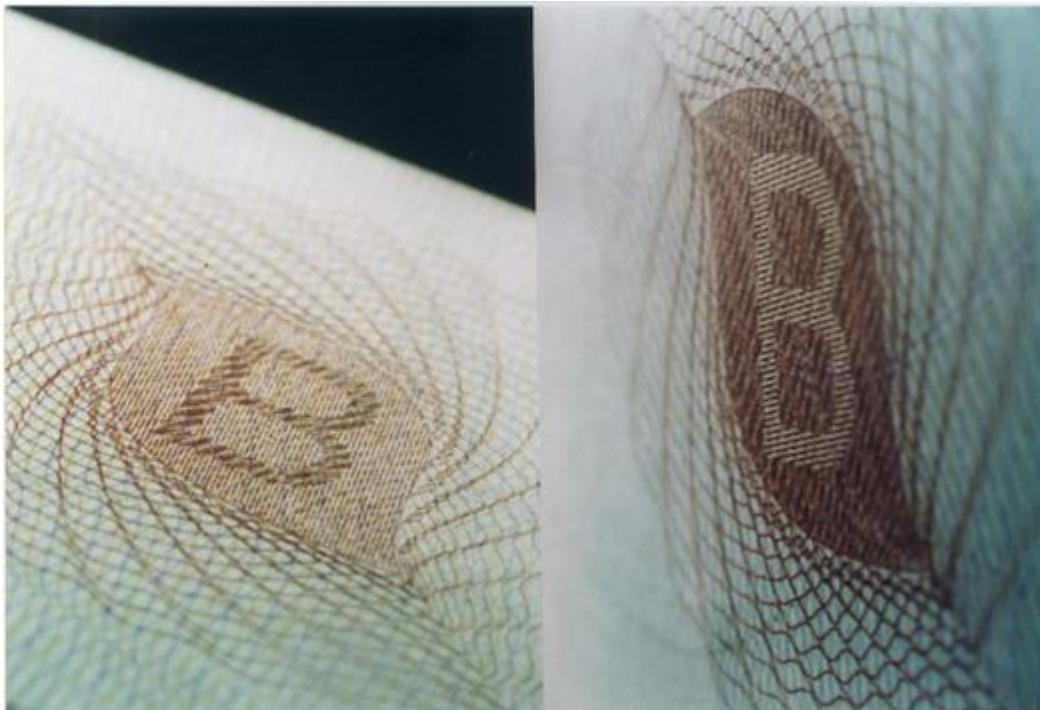
Latent image revealed by tilting the document page

See also: ➡️ *Background / security printing*

See also: ➡️ *Oblique light*
See also: ➡️ *OVD (optically variable device)*
See also: ➡️ *OVI (optically variable ink)*
See also: ➡️ *Tilting effect*
See also: ➡️ *Variable laser image*

Letterpress printing

A printing technique in which the printing areas are raised, similar to a stamp. It is one of the oldest printing techniques. It is a **direct printing technique**, like also the (more modern)
➡ *flexography*, which can be used for printing on almost any kind of substrate, including for example plastic films.

In security documents letterpress printing is often used for printing sequential numbers such as
➡ *serial numbers*.

Letterpress form for text printing

Serial number in letterpress printing
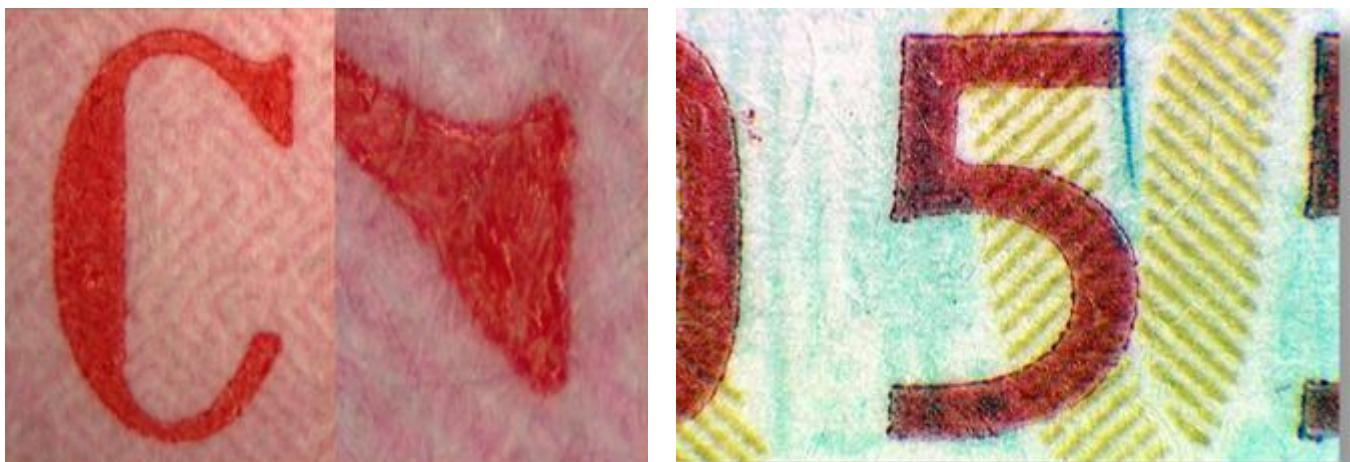
Not to be confused with ➡ *indirect letterpress (dry offset).*

Machine Readable Travel Document - MRTD

The specifications of **M**achine **R**eadable **T**ravel **D**ocuments (**MRTD**) - passports, visas and ID cards - are set out in **document 9303** of the **I**nternational **C**ivil **A**viation **O**rganisation (**ICAO**). Most countries apply these rules in their machine-readable passports, visas and ID cards used for crossing borders. According to these standards, the biodata page of a MRTD is divided into two different zones:

- A *Visual Inspection Zone (VIZ)* containing the document designation, the holder's facial image, personal data and data concerning issue and validity.

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- A ➡ *Machine Readable Zone (MRZ)* containing some of the information from the **Visual Inspection Zone** (VIZ).

Size 2 MRTD (ID2 format):

01 Issuing State	02 Type of document

	03 Name – primary identifier (VR)
	04 Name – secondary identifier (VR)
	05 Sex (3)
	06 Nationality (3)
	07 Date of birth (15)
13 Photo of holder	08 Optional personal data elements (VR)
	09 Document (serial) number (VR)
	10 Date of expiry (15)
	11 Optional document data elements (VR)
Zone V	12 Signature

Upper machine readable line
Lower machine readable line

Example: Required elements of an ICAO-compliant *Machine Readable VISA (MRV):*

Territory covered

Number of entries

VIZ:

Validity period

Duration of stay

MRZ

See: ➡ *Machine verifiable features*

See also: ➡ *Microchip – contactless*
See also: ➡ *Password Authenticated Connection Establishment (PACE)*

Machine Readable Zone - MRZ

In a ➡ *Machine Readable Travel Document (MRTD)*, the **M**achine **R**eadable **Z**one (MRZ) contains some of the information from the Visual Inspection Zone in the form of a sequence of alphanumeric characters and the symbol "<", forming two or three lines. This sequence of characters can be read by document readers in order to facilitate inspections of travel documents (OCR - *Optical Character Recognition*[082] – fonts).

Form of the MRZ:

- **ID1 / td1 format:** 86 (85,6) x 54 (53,98) mm.
  <u>Three lines</u> with 30 characters each, situated on the reverse side (verso) of the document.

- **ID2 / td2 format:** 105 x 74 mm.
  <u>Two lines</u> with 36 characters each, situated at the bottom of the biodata page or visa.

- **ID3 / td3 format** (**MRP** – Machine Readable Passport): 125 x 88 mm.
  <u>Two lines</u> with 44 characters each, situated at the bottom of the biodata page.

Machine readable integrated biodata card (biodata page), ID3 format:

Visual Inspection Zone (VIZ)

2-line MRZ (Machine Readable Zone)

See: **Document 9303** of the **I**nternational **C**ivil **A**viation **O**rganisation (**ICAO**)**.**

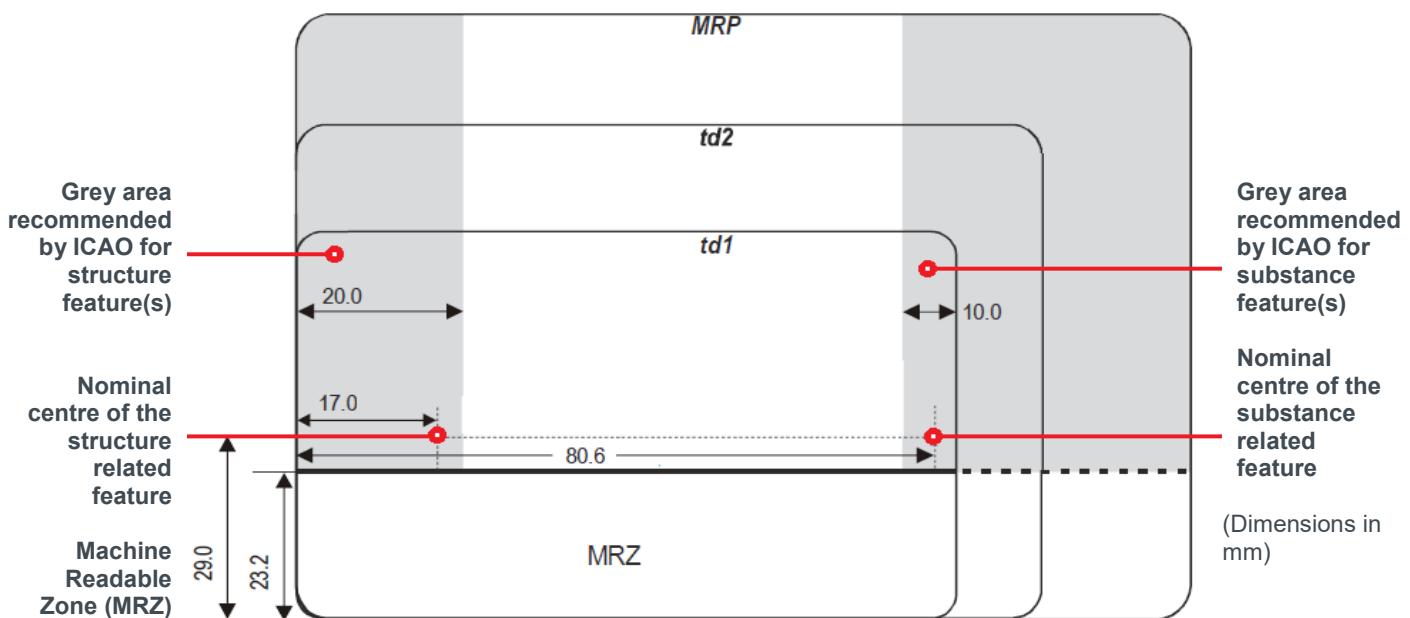See also: ➡ *Machine verifiable feature*

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Machine verifiable feature

Machine verifiable features (machine assisted document security verification features) are security features that can be read and verified by machines (document readers); they serve to authenticate a travel or identity document by detection or measurement of special physical properties of document elements or of structures and also contribute to the authentication of the holder of the document. See: ➡ *Machine readable travel document (MRTD).*

➡ *Barcode / 2D barcode*
➡ *Card Access Number (CAN) and Password Authenticated Connection Establishment (PACE)*
➡ *Machine Readable Zone – MRZ*
➡ *Chip (microchip) with contact*
➡ *Microchip – contactless*
➡ *Magnetic strip*
➡ *Optical stripe*

Other (optional) *machine verifiable features* include the following

1. *structure related security features* such as e.g. ➡ *OVDs (Optically Variable Devices),* ➡ *retroreflective laminates* and ➡ *transparent windows*

2. *substance related security features,* such as *pigments* added e.g. to *security inks* as well as *coloured* and / or *fluorescent fibres* and ➡ *planchettes* added to the *substrate*

3. *data related security features,* like for example *holographic* or *magnetic* ➡ *security threads* which can store encoded data, or ➡ *images (printing) containing invisible personal information (IPI) or scrambled document related information.*

Magnetic strip

Thin strip of magnetic material attached to a plastic card and used for recording data.

Magnetic strip
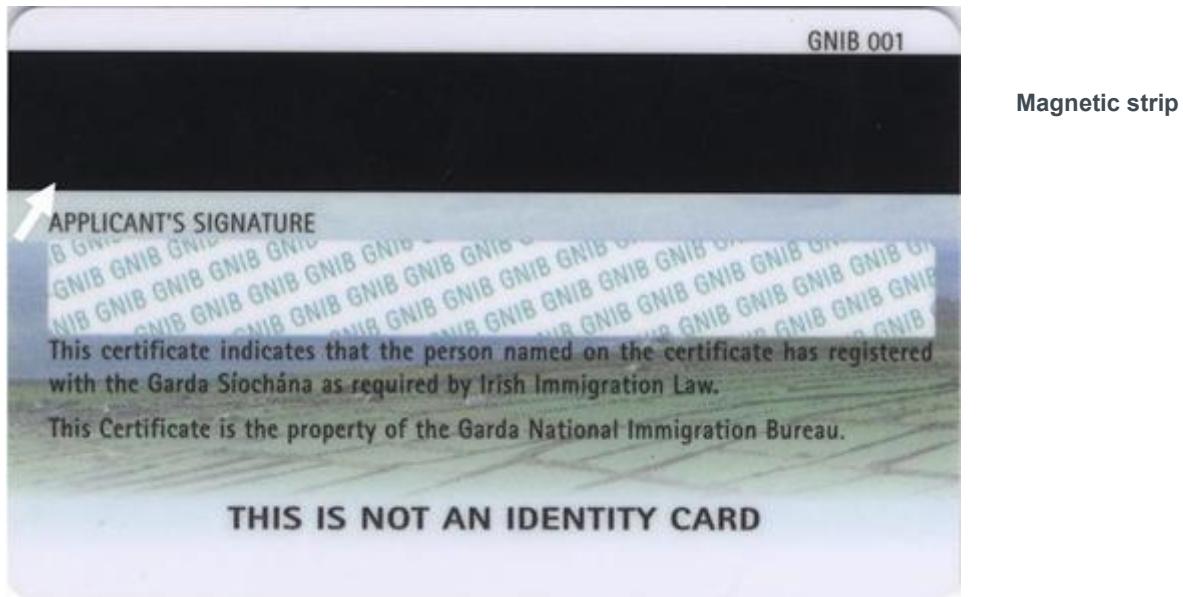
See also: ➡ *Machine verifiable feature*
See also: ➡ *Optical stripe*

Metallic ink

Tilt the page. Look at the metallic ink under **NORMAL LIGHT** or under ➡ **oblique light.**
Perform a 90° rotation:

Metallic pigments (pigment metals) like aluminium and bronze are used as components of printing inks to produce surfaces with a metallic sheen. **Metallic ink** is not a security ink in the strict sense, as it is freely available to any commercial printer. Metallic ink is nevertheless a typical **anti-copy ink**, as a copy (including one produced by a desktop printer) cannot render the original metallic effect.
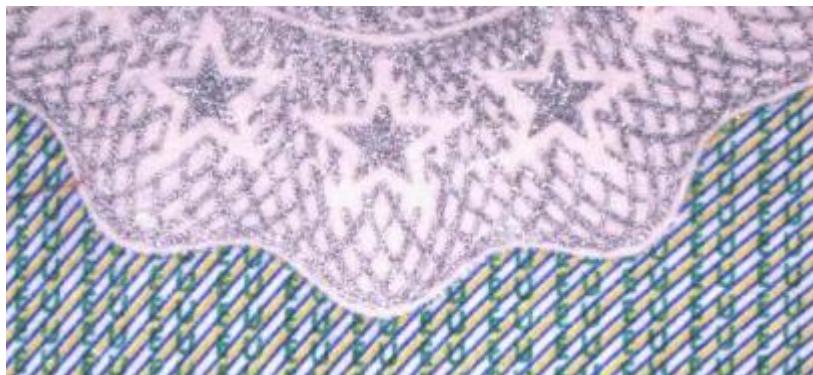
Silver-coloured metallic pigment

Metameric colours

Metameric colours are pairs of (chemically) different colours that can barely be distinguished in one type of illumination (usually in normal, broad daylight), but show a noticeable colour contrast in another type of light, often infrared light, or through a special optical red filter.

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A special metameric effect is for example ***infrared drop-out:*** the otherwise visible ink cannot be seen in part of the ***infrared range*** of the spectrum.

**Metameric colours
are for example used
in EURO banknotes.**

Under normal light

**Under IR light, only
the emerald number,
the right side of the
main image and the
silvery stripe are
visible.**

© European Central Bank (https://www.ecb.europa.eu)

Other ***metameric effects*** are (somewhat misleadingly) referred to as ***ultraviolet,*** or ***infrared***, or ***red filter metamerism***, and so on.

To a certain degree, the perception of two ***metameric inks*** looking identical under broad daylight can also depend on the observer.

Microchip – contactless

A *contactless integrated circuit (microchip)* is used for the storage and the processing of data, embedded e.g. in passports, ID cards and biometric residence permits. In most documents, the *microchip* is not visible under normal light. The existence of a contactless microchip is usually indicated by the ➡ **e-passport** symbol.

On ➡ *PC (polycarbonate) cards* the position of a contactless microchip is often visible under ➡ *oblique light:* there is nearly always a slight depression of around 0.01mm depth and 3-5mm diameter above the microchip package inside the card body. This depression cannot be felt, because it is more a gradual change in surface height, but it is visible to the human eye if the card is tilted against bright (oblique) light.

The microchip is connected to an aerial (electromagnetic loop antenna) which allows communication with the card reader via electromagnetic waves (Radio Frequency Identification - RFID). To supply the chip with energy and to start communication, proximity to the reader is required. The protected content of the chip can be read at a distance of 0-10 cm.

Biometric or ➡ *e-passports* incorporate a *contactless (or proximity) chip*. This chip may be incorporated into the travel document in a variety of ways. The chip may be embedded within a thick transparent laminate, within the document cover, or within the polycarbonate biodata page.

To maintain data security in e-passports, one of several standardised access control protocols is used:

- **B**asic **A**ccess **C**ontrol (**BAC**) makes sure that the contactless chip can be read by the inspection device only once it has been unlocked by a validated access key.

- **E**xtended **A**ccess **C**ontrol (**EAC**) provides additional security by requiring the exchange of public keys between chip and inspection device (terminal authentication): digital signatures protect the authenticity and integrity of the stored data, usually using the ICAO PKI (Public

Key Infrastructure) - inspection certificates must have been exchanged between or published by issuing states to allow inspection.

- **S**upplemental **A**ccess **C**ontrol (**SAC**) uses a cryptographic protocol called *Password Authenticated Connection Establishment (PACE).* Data from the ➡ *Machine Readable Zone - MRZ* or alternatively a *Card Access Number (CAN)* printed within the ➡ *Visual Inspection Zone (VIZ)* of the biodata page is used for authentication between inspection terminal and microchip.
As from 1 January 2018 electronic MRTDs (eMRTD) which <u>only</u> support Password Authenticated Connection Establishment (PACE) are considered to be ICAO compliant.
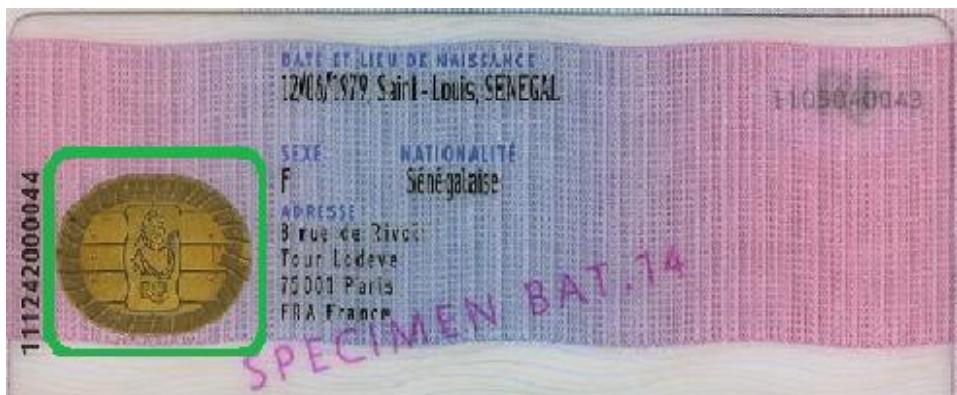
Contact chip

Contact chip <u>and</u> contactless chip and specially formed loop antenna in the polycarbonate card are visible under➡ *transmitted light.*
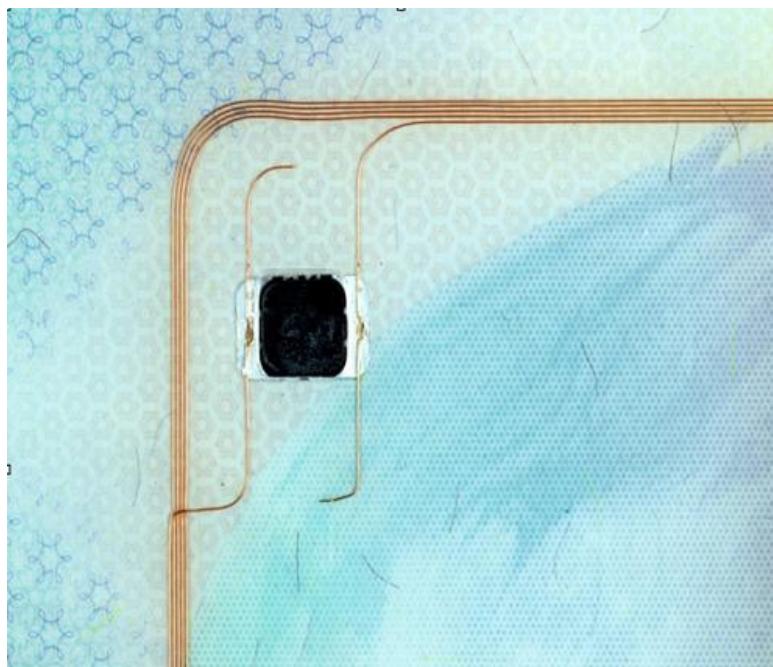
Here, as an exception to the rule, *microchip and antenna are visible under* *normal light*

See also: ➡ ***Biometric identifier***
See also: ➡ ***Machine verifiable feature***

See also: ➡ ***Chip (microchip) with contact***

067
068

Miniprint(067) and microprint(068)

Miniprint and *microprint* (sometimes also called *extra small print - ESP*) are lines or motifs made up of very small letters, numbers and/or images that are barely perceptible with the naked eye, but become visible at magnification; in traditional documents they can form the guidelines for writing. *Miniprint* and *microprint* are also used as security elements of the ➡ *background / security printing* and in ➡ *security threads*.
See also ➡ *endless text.*

- *Miniprint*(067) may be discerned with the naked eye (but more clearly with magnification).
- *Microprint*(068) will often require the use of low magnification, e.g. a jeweller's loupe.

Basic methods of reproduction often do not allow detailed microprinting. Therefore, forged documents will often show unreadable microprint. However, using advanced reproduction techniques it is possible to reproduce miniprint and microprint to a high standard.

Miniprint (the blue text) and microprint (smaller purple letters)

Needle perforation

Needle perforation: Making holes mechanically (by piercing or punching) in order to incorporate a number or motif into a document.

➡ *Serial numbers* are perforated in a regular, matrix-type arrangement of circular, equal-sized holes always pierced in the same direction. Needle perforation is recognisable by the ridges ("burr") that can be felt on the back of the substrate.
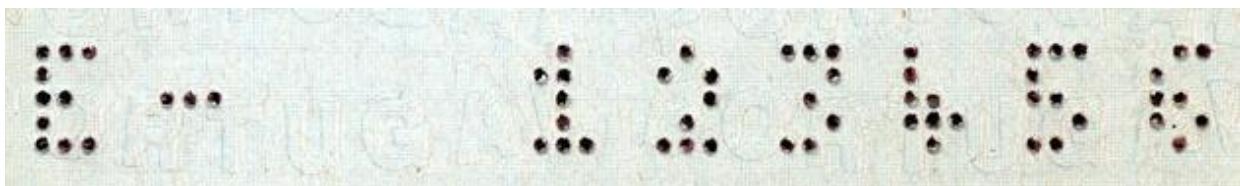
Not to be confused with ➡ *laser perforation.*

See: ➡ *Numbering*

Needle printing

A *needle printer* or traditional *dot-matrix printer* is a type of computer printer which prints by impact, striking an ink-soaked cloth ribbon against the substrate, much like a typewriter, but, unlike a typewriter, letters are drawn out of a dot matrix.
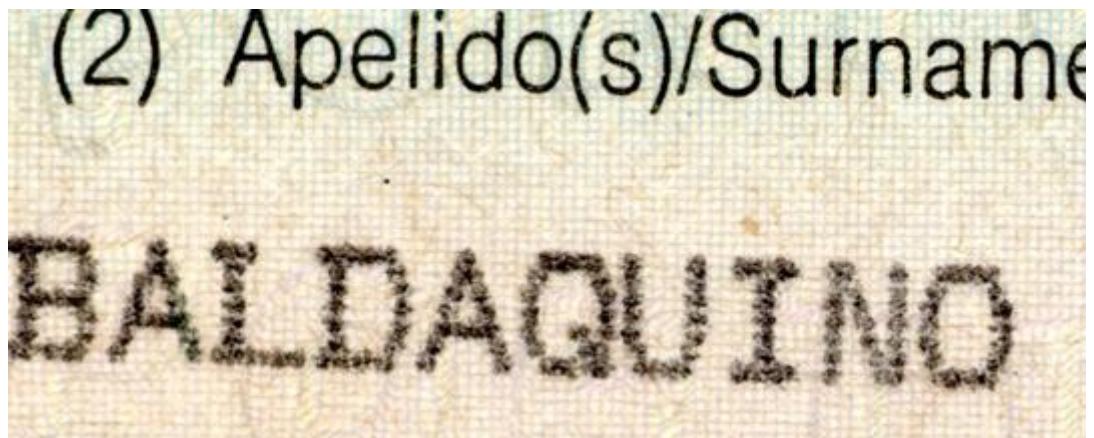

Needle printing

070

Numbering

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• National (personal) identification number

National identification numbers (social security/ insurance/ tax numbers) are often (but not always) mentioned on ID cards and in residence-related documents. As they are unique identifiers of a natural person, they are personal data.

• They can help if more than one document of the same holder is to be checked.

• Some of them contain additional personal data such as the date of birth, and the correctness of their content can be checked.

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• CAN

6 digit CAN (Card Access Number) for a ➡ *Password Authenticated Connection Establishment (PACE).*

227

• Number of the licence

➡ *Driving licence.*

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• Serial number
• Document number

The **serial** or **document number** is a <u>unique</u> number that is printed and / or perforated in a document (or in parts of it); its uniqueness allows a document to be traced, e.g. during the production process and if it is lost or stolen.

Serial numbers are in our documents described under the heading **Numbering**, as the numbering does not necessarily follow a **series** any more in very many recent **security documents**.

The following alphanumeric characters are used to indicate the composition of the *serial number* within the descriptive text:

A: **any letter**
N: **any digit**
R: **any digit or letter (in a random sequence)**

e.g. **AA-NNNNN**, **AAA NNN, AANNNN**, or **A RRRRRRRR**.
Other letters are used only if they actually appear in every document of the same series (version) – in such cases they are placed in quotation marks, e.g. **"Nr EE" NNNNNN :**

➡ *Fluorescent serial number*
➡ *Laser-perforated serial number*

➡ *Needle perforation*
➡ *Letterpress printing*
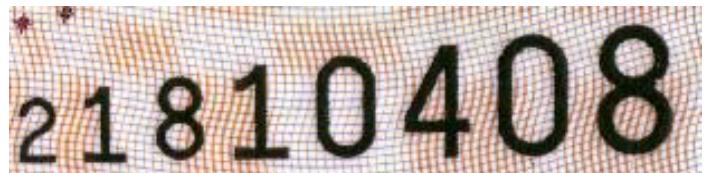
Not to be confused with the *page numbers*[193] printed for example on the *inner pages* of a booklet document (passport).

Oblique light

Oblique light: Light from the side, falling at a shallow angle, which reveals the surface structure of an object through contrasts of light and shade.
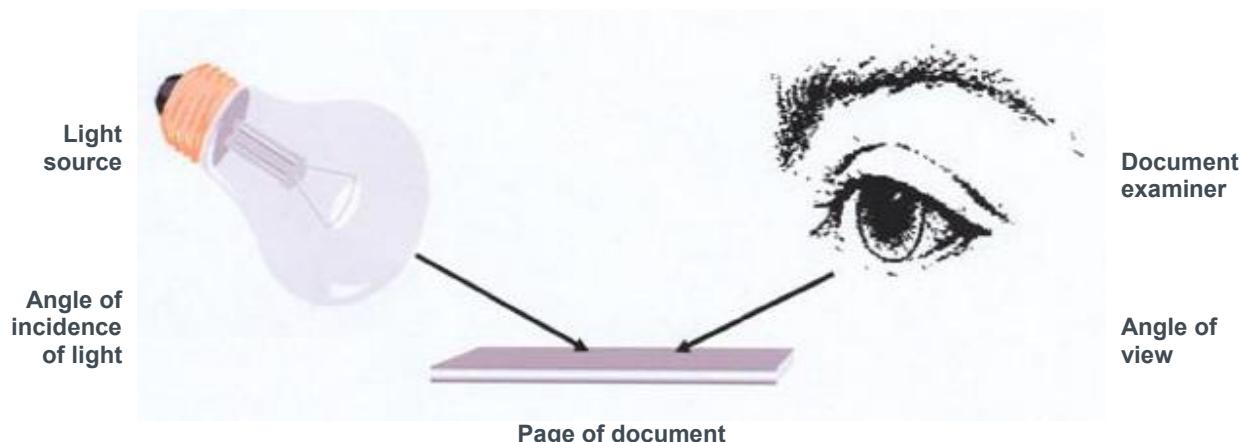
Oblique light is used especially to inspect ➡ *embossing stamps,* ➡ *intaglio printing,* ➡ *latent images* and mechanical erasures.

Light source

Angle of incidence of light

Document examiner

Angle of view

Page of document

See also: ➡ *Co-axial light*
See also: ➡ *Transmitted light*

See also: ➡ *UV light*

See also: ➡ *Latent image*
See also: ➡ *OVD (optically variable device)*
See also: ➡ *OVI (optically variable ink)*
See also: ➡ *Tilting effect*
See also: ➡ *Variable laser image*

Offset printing

Offset printing (also called ***lithography***, or ***wet offset***) is an ***indirect printing process*** in which text and images are transferred from the plate cylinder (with an even surface) to the offset cylinder (rubber blanket) and from there printed on to the substrate. It is characterised by even inking and precise edge limits.

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In security printing, another indirect printing process, ***indirect letterpress*** (sometimes also called ***letterset, dry offset***, *or **indirect relief***) ***printing*** is widely used. Laser or photographic processes (e.g. nyloprint® - photopolymer printing plate) are applied to the flexible printing plate, producing a relief surface; only the raised parts get into contact with the rubber blanket. The printed result is very similar to "wet offset" (the characteristic features of ➡ ***letterpress printing*** can not always be seen).

➡ ***Rainbow colouring***

Optical stripe

An **optic stripe** is a laser-readable memory device with a storage capacity up to 4 MB. Multiple data files including images can be stored; also visual features, like a micro image, security patterns and an ➡ **OVD (Optically Variable Device)** can be viewed for rapid card authentication.

See also: ➡ *Machine verifiable feature*
See also: ➡ *Magnetic strip*

011

OVD (Optically variable device)

OVDs are security features which show different information, depending on the viewing and/or lighting conditions.
➡ *Oblique light*
The particular changes of appearance when rotating and tilting are reversible, predictable and reproducible.

We differentiate between the following kinds of OVDs:

1. **Devices with colour changes based on thin layer interference:**
    - ➡ *OVI (optically variable ink)*
    - ➡ *iridescent laminate*
    - ➡ *iridescent ink*

2. **Materials/ Structures with variable reflection characteristics:**
    - ➡ *retroreflective laminate*
    - ➡ *tilting effect*

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3. **Diffractive Optically Variable Image Devices - *DOVIDs*:**
    DOVIDs contain gratings (usually in the form of surface reliefs) which modify light by diffraction. Thus different effects like two- or three-dimensional images or kinematic and/or colour-changing effects are created. The different DOVIDs differ in their image resolution, brightness, and their animation capabilities. They are generally known by their trademark names, like:
    - ➡ *Hologram*
    - **Computer generated DOVIDs:**
      ➡ **Kinegram®,** ➡ **Identigram®,**
    ➡ **DID® - Diffractive Identification Device,**

079
177
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    Exelgram®, Movigram® (177), Pixelgram® (079), Stereogram® (178),

    dot matrix hologram.

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A **DOVID** can contain
➡ *microprint,* **kinetic microtext,** or a
variable laser readable micro image not visible when magnified under normal light.

A **DOVID** can be integrated in a ➡ *laminate.*

See also: ➡ *Latent image*
See also: ➡ *Tilting effect*
See also: ➡ *Variable laser image*

OVI (Optically variable ink)

Tilt the page and the colour will change.

OVI is a printing ink that contains microscopic pigments acting as interference filters, resulting in large colour shifts (strong variations in colour) depending on the angle of observation or lighting.
➡ *Oblique light*

OVIs are used in ➡ *intaglio printing* and in ➡ *screen printing*.

Intaglio-printed OVI

OVI
(see the colour change in the example
on the right-hand side of this image:)

Counterfeit ❌ ✅ **Genuine**
metallic ink used   **OVI used**
instead of OVI
(no colour shift)

Screen-printed OVI on a € 50 Banknote

Genuine ✅

OVI: colour shift
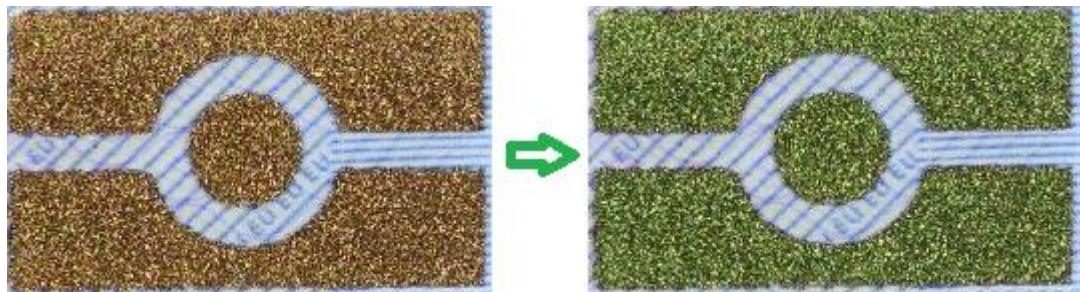
See also: ➡ *Iridescent ink*

See also: ➡ *OVD (optically variable device)*

PC (polycarbonate)

Unlike ➡ *PVC cards* for example, *PC cards* produce a sound with a metallic ring when dropped on a hard surface.

See also: ➡ *Composite card (PET-PVC)*

When PC is used as a substrate for documents (e.g. polycarbonate *biodata pages*, *integrated biodata cards* in passports, *polycarbonate ID cards,* or *banknotes*), a composition of layers is fused at high temperature and under high pressure.

With PC as a substrate for security documents, a wide range of security features can be integrated, <u>e.g.:</u>
➡ *background / security printing,*
➡ *fluorescent overprint: high-resolution true-colour UV images, e.g. True Vision*

<u>Personalisation</u> by
➡ *inkjet printing colour personalisation inside* the multi-layer laminate structure of a *polycarbonate card*.
➡ *laser engraving*, or e.g.
➡ *laser-perforated secondary (ghost) image*,
➡ *variable laser image* and
➡ *transparent window*.

The surface of a PC card can be tactile:
➡ *raised (tactile) laser engraving,*
➡ *laminate embossing* &
➡ *OVDs (Optically variable devices)* can be incorporated.

➡ *Microchip*
➡ *Magnetic strip*
➡ *Optical stripe* can be incorporated.

See also: ➡️ *Binding: - Hinge*

Photochromic ink

Photochromic inks change their colour when exposed to ➡️ *UV light*. When the UV light source is removed, the colour change stays for a certain time before the colour reverts to its original state.

Laminate overprint with iridescent, photochromic ink

After exposure to UV light the greenish iridescent overprint stays blue for a certain length of time

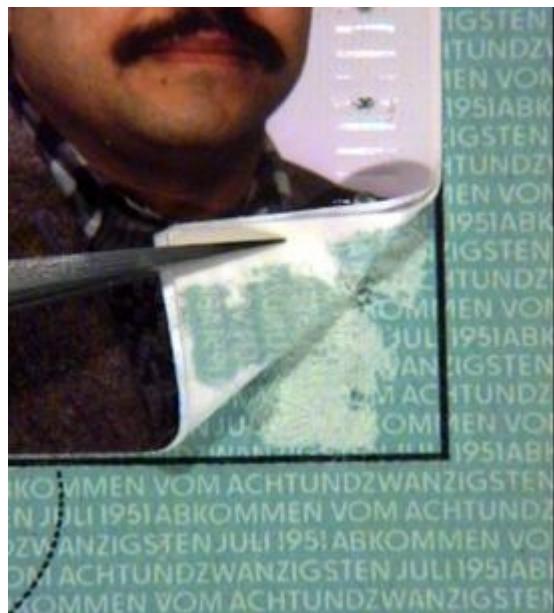# Photograph of the holder - fixing methods

- ## Photo Patch

Fixing method for conventional photos.
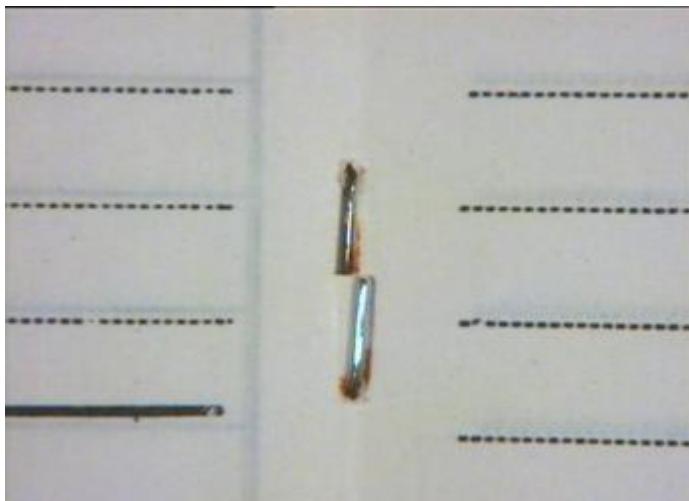
• **Glued**

Fixing method for conventional photos.

• **Eyelets (rivets)**

Fixing method for conventional photos.

- **Stapled**

Authentication:
See also: ➡ *Embossing stamp*
See also: ➡ *Ink stamp*
See also: ➡ *Relief embossing*
See also: ➡ *Tank tracking*

Photographic paper

Photographic paper: the paper substrate is coated with light-sensitive chemicals.

(Not to be confused with specially coated printing papers for high-quality inkjet or laser printing (digital photographic) processes, which in everyday language are also referred to as *photographic papers*.**)**

See: ➡ *Photographic process*

Photographic process

Photographic process: Procedures by which light-sensitive materials are made to produce an image on ➡ *photographic paper.* A photographic process is a possible integration technique for ➡ *biodata / photo / signature integration.*

**Biodata integration by photographic process**

Planchettes

Planchettes are small coloured discs incorporated (scattered) in the paper substrate during manufacture.

Planchettes are incorporated in a similar way to ➡ *coloured security fibres.*

Planchettes can also be metallic or transparent; they may also fluoresce under ➡ *UV light,* or be made of an iridescent substance showing colour shifts.

Coloured planchettes and fibres
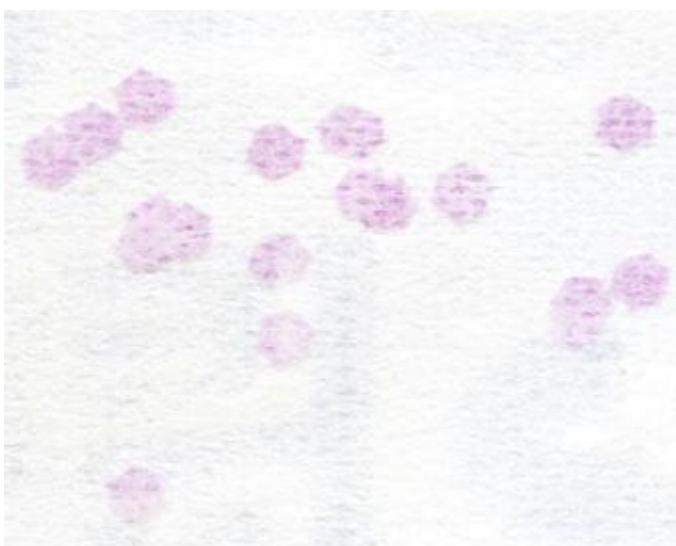
Thermochromic planchettes

See also:
➡ *Fluorescent planchettes*
➡ *Coloured security fibres*
➡ *Fluorescent fibres*
➡ *Substrate without optical brightener*

Council of the European Union
General Secretariat

PRADO

PRADO (the Council of the European Union's PUBLIC REGISTER OF AUTHENTIC TRAVEL AND IDENTITY DOCUMENTS ONLINE) is a multilingual site with information on authentic identity and travel documents. Document descriptions include technical descriptions - descriptions of some of the most important security features of the document and as a rule also include (indicative) information on the maximum possible validity of the described document, as well as information on its main usage.

Document experts in all EU member states and in Iceland, Norway and Switzerland provide and select the information to be released to the general public via **PRADO**. The information originates from the classified ➡ **Expert FADO** system. The steering committee in the Council of the European Union is the Working Party on Frontiers in the formation of False Documents experts.

PRADO is organised and hosted by the General Secretariat of the Council of the EU (GSC), in the Directorate-General for Justice and Home Affairs (JAI). Technical implementation and maintenance are the responsibility of GSC.SMART.1.D.

Most of the text entries in **PRADO** documents are standardised descriptions which are translated automatically and available immediately in all 24 official languages of the EU. Free-text descriptions are translated by specialised linguists in the GSC.

www.consilium.europa.eu/prado

Target audience

PRADO targets the general public, including non-governmental organisations, but also governmental organisations, that do not have access to *iFADO*, including for example:
- Employers
- Postal services
- Banks and credit authorities
- Security companies
- Car-rental agencies.

- *When examining a document it is important to know its technical details.*

- *PRADO provides easy access to official information on many travel and identity documents.*

Mission

The main purpose of **PRADO** is to provide free and reliable information in the Internet to anyone who (is required to) check identities. Identity checking not only takes place at the external borders of the Schengen Agreement Area, but happens regularly in everyday life. **PRADO** is intended to help raise awareness and ascertain the authenticity of documents; doubts can then be followed up by document experts.

Proceedings

Irrespective of a document's origin, questions (including questions on particulars of foreign documents) should be addressed to the respective
➡ **Identity and Travel Documents – National Contact Point.**

Suggestions for improvements or observations on errors and bugs please send to:
helpline.prado@consilium.europa.eu

General Secretariat of the Council of the European Union (GSC)
Directorate-General Justice and Home Affairs, JAI.1
Rue de la Loi 175
1048 Brussels, Belgium.

See also: ➡ **FADO**
See also: ➡ *iFADO*

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Pre-printed text

In a security document, ***pre-printed text*** is printed on top of the ➡ ***background / security printing.***

Not to be confused with ➡ ***biographical / other personalisation text.***

Not to be confused with ➡ ***background / security printing.***

099
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PVC (polyvinylchloride) card

PVC - a thermoplastic (***transparent***[(099)]) polymer - is used as a substrate in many documents.

➡ ***PC (polycarbonate) cards*** as well as ➡ ***composite cards (PET-PVC)*** are often preferred for security documents which require high durability.

Rainbow colouring

Rainbow colouring is also called *split duct printing*. This *colouring process* used in ➡ *offset printing* is used to protect security documents against colour separation or copying by subtly merging colours into each other, resulting in a gradual colour change.
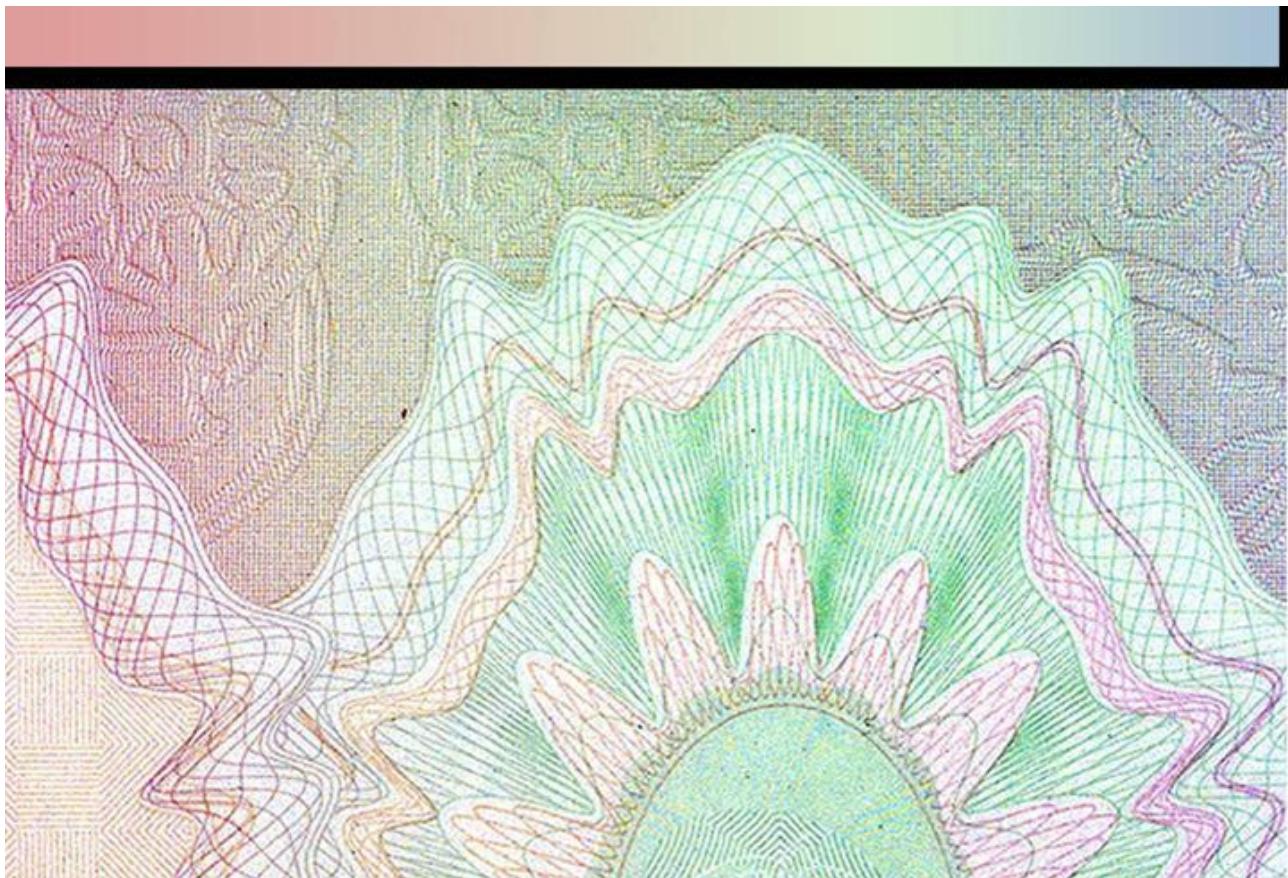
See also: ➡ **Background / security printing**
See also: ➡ **Schablon (stencil) multiple colouring process**

Rasterising (screening)

Screening (originally named from a patterned glass screen inserted between the illustration and the light source on a camera), or *rasterising,* transforms the shades of colours of graphics / images into tiny dots into a raster format in order to print them. As the dots are small enough, the human eye cannot distinguish between. By changing the ratio in-between them, various tints are simulated. Different shapes of dots are possible.

Bitmap images (graphics files made out of pixels) are sometimes also called *raster images.*

Practically all printing techniques simulate shades of colours by using dots (screening).
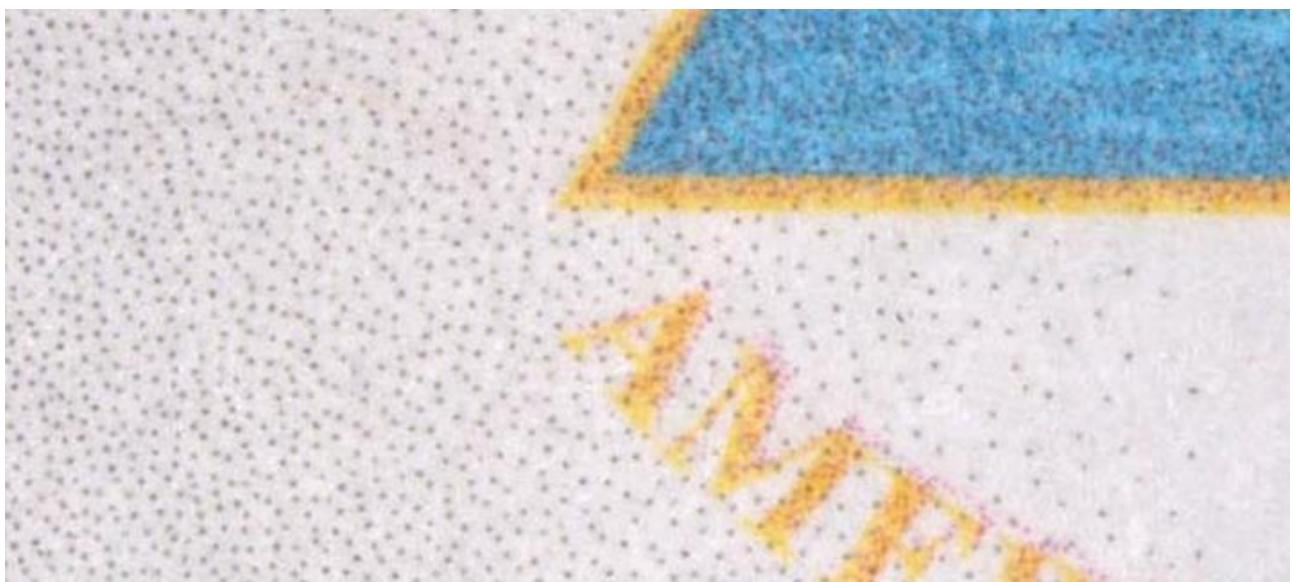
Relief embossing

Look at the embossing under **NORMAL LIGHT** or under ➡ *oblique light*; feel the raised / lowered surface.

Relief embossing is sometimes also called ***blind embossing***: A colourless embossing of images or text. It involves high-pressure embossing of letters, motifs or other designs.
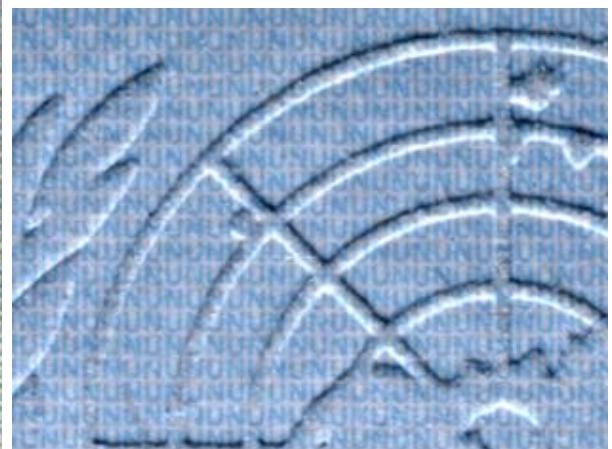
Recto	**Verso**

See also:

➡ *Hot foil stamping*
➡ *Laminate embossing*
➡ *PC (polycarbonate)*

Authentication: See also:
See also: ➡ *Embossing stamp*
See also: ➡ *Ink stamp*
See also: ➡ *Tank tracking*

See also: ➡ *Photograph of the holder - fixing methods*

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Retroreflective laminate

Retroreflective laminate: An invisible image is incorporated into the laminate, only rendered visible by the use of ➡ *co-axial light* using a special viewer or technical equipment.

Normal light (left) & viewed by co-axial light (right)

See also: ➡ *Oblique light*
See also: ➡ *OVD (optically variable device)*

Rip cuts (designed weak points)

The sticker contains rip cuts (deliberately incorporated weak points) which are designed to tear apart if an attempt is made to remove the sticker from the document page on which it is affixed.

See also: ➡ *Laser-perforated fine structures and designs (rip cuts).*

Schablon (stencil) multiple colouring process

The *Schablon (stencil) multiple* colouring process - sometimes also referred to as the *Orlof (Orlov) process* - is used in ➡ *intaglio printing* and enables more than one colour to be printed simultaneously and accurately with one printing plate.

A modern printing press can often print several colours (e.g. 3, 4, or 5). The individual colours are applied via individual stencils that match the elements or parts of the required final design. These **stencils** are also referred to as **schablons** (or **chablons**). The inks may overlap to a small extent and in the final printed image a slight colour transition can therefore be seen.

2 colours

3 colours

The colour transitions need not, as in ➡ *rainbow colouring* (offset printing), run parallel to the direction of the printing process in the printing machine.

See also: ➡ *Background / security printing*

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Screen printing

Tilt the page. Look at screen printing under *NORMAL LIGHT* or under ➡ *oblique light.*

Screen printing is a printing technique also known as *silk-screen printing* in which the print is produced by the ink being pressed with a so-called doctor blade through the permeable areas of a screen (mesh) on to the substrate below. Screen printing enables a thicker layer of ink to be applied in one operation than any other printing process.
Characteristics: Generally dense covering of ink, thick layer; net structure with saw-tooth edges.

In *security printing*, screen printing is mainly used for ➡ *laminate overprints* or printing of ➡ *OVI.*

Screen-printed OVI

Secondary (ghost) image

A *Second (ghost or shadow) facial image* of the document holder can be included on the biodata page or on a second page containing biographical information in the identity document. It can be applied by the same printing process as the primary facial image, or by different processes, e.g. using:

➡ *fluorescent overprint,*
➡ *laser perforation,*
➡ *a transparent window*, or an
➡ *Identigram®.*

Laser-perforated secondary (ghost) image viewed by transmitted light (on the right-hand side)

See also: ➡ *Biodata / photo / signature integration*

Security thread

Look at the page against the light - you will see the security thread as a dark line.

A *security thread* is a strip (plastic, metallic, or other material) incorporated in the substrate during manufacture to serve as an additional security feature. A broad range of different security *threads exists*, from *polymer* to *metal-coated*, *coloured* and *micro-printed laminate strips*, to highly complex threads*.*

**Security thread with negative microprint (by transmitted light)**
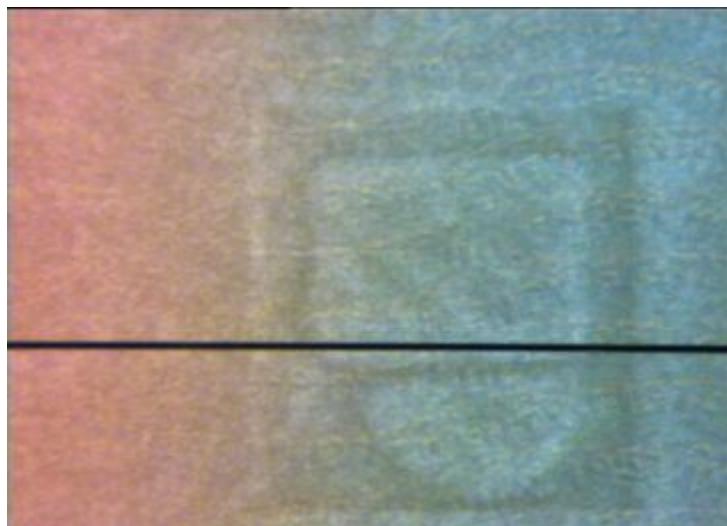
See also:
➡ *Microprint*

Security threads can possess machine-readable properties, e.g. *magnetic* or *holographic personalised security threads*.

The security thread may be completely embedded in the substrate or lie partly on top of it - window-like; then it is called *windowed security thread*, or *windowed thread:*
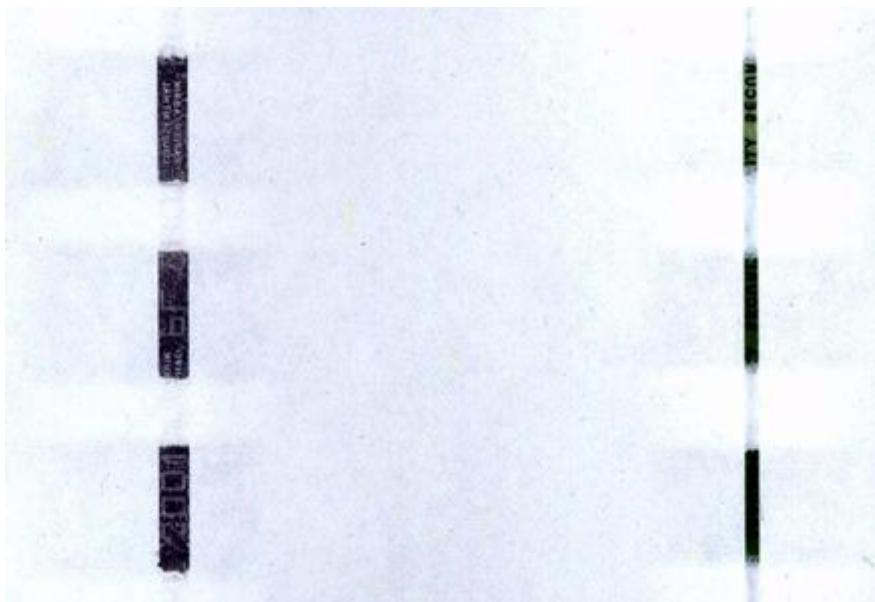
See also: ➡️ *Windowed motion strip (ribbon)*

See also: ➡️ *Biographical / other personalisation text*
See also: ➡️ *Endless text*
See also: ➡️ *Fluorescent security thread*

See-through register

Look at the page against the light.

See-through register: Images on the front and reverse side are printed in an accurate *front-to-back register*. Designs or partial motifs are seemingly printed at random on the recto and verso of the substrate, but they match up perfectly and form a complete new motif when viewed by ➡ *transmitted light*.
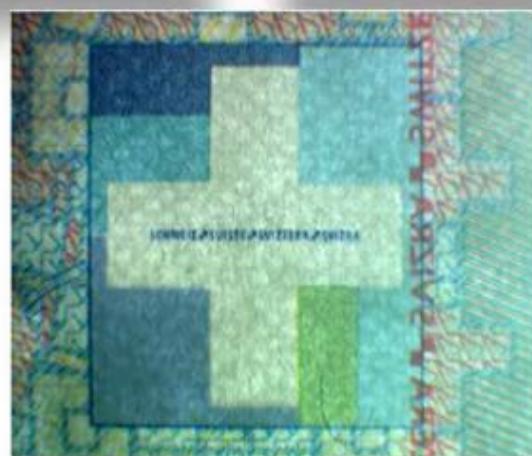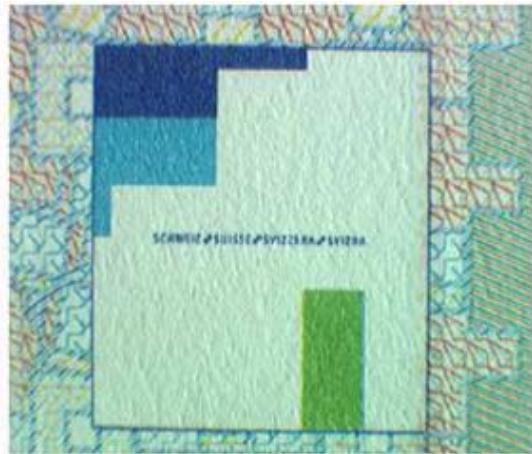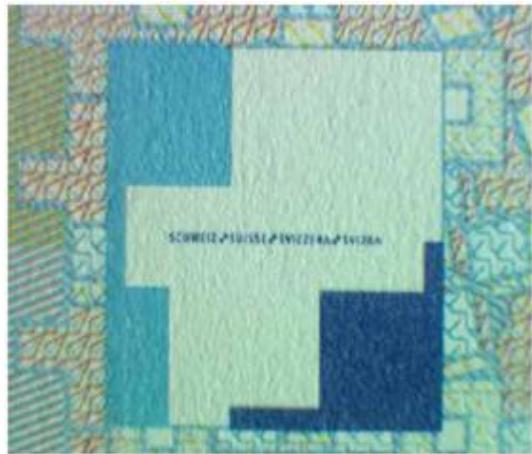
Imperfect register in *false documents* will produce a blurred image when viewed by transmitted light.

Motif on recto

Motif on verso

See-through register

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Stamp (ink stamp)

Liquid *ink* is transferred to the substrate by means of a **stamp**, e.g. for the **authentication** of a document or of a conventionally fixed (e.g. glued) *image of the holder*.

Authentication: **See also:**
See also: ➡ *Embossing stamp*
See also: ➡ *Relief embossing*

See also: ➡ *Photograph of the holder - fixing methods*

Proof of entry into the Schengen area at an external border. "

Stitching thread

See:
➡ *Binding,*
➡ *Fluorescent stitching thread*

Substrate showing low base fluorescence (substrate without optical brighteners)

A ***substrate***(087) ***without optical brighteners***(001) appears dark *(*shows ***low base fluorescence***(074)) *under* ➡ ***UV light.***

Purported authentic documents under NORMAL LIGHT

UV LIGHT: Counterfeit (parts of) documents fluoresce (shine) more brightly

Traditional security paper (typically 25 % to 100 % cotton fibre paper) is still used in some security documents and for banknotes. The use of a paper substrate with optical brighteners in security documents is however also possible (but it is not very common).

Optical brighteners are substances which are incorporated during manufacture into a paper pulp which consists mainly of wood fibres, in order to make the substrate appear whiter. The
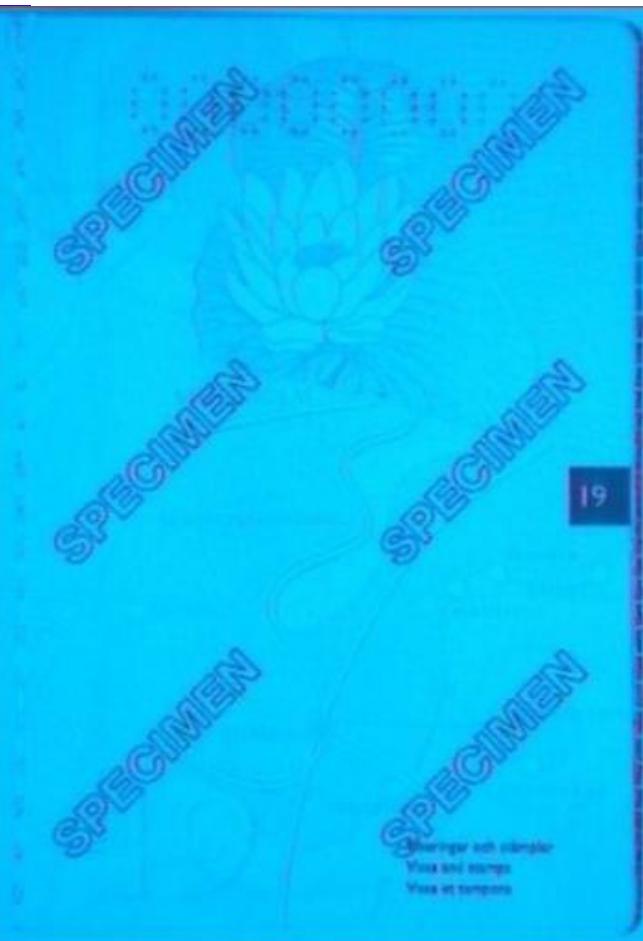
presence of optical brighteners can be detected by their **bluish fluorescence under**
➡️ **UV light.**

Additional security features that a substrate can contain include
➡️ **coloured security fibres**
➡️ **fluorescent fibres**
➡️ **planchettes.**

| Substrate without optical brighteners | Substrate with optical brighteners |

For **synthetic substrates**: see under: ➡️ **Synthetic fibres** and ➡️ **PC (polycarbonate).**

Synthetic fibres

Synthetic fibres are used as a main component in several special traditional *security papers*; they make the substrate highly durable and resistant.

Examples of synthetic printing media:
*Neobond*® (e.g. old pink, folded German driving licence).
Teslin®   (as it is commercially available, Teslin® is also often used for counterfeiting ID cards.)

Synthetic fibres are not to be confused with ➡ *coloured security fibres* which do not contribute to the mechanical properties of a substrate.

See also: ➡ *Substrate*

Tank tracking - perforation

A method of securing a conventionally fixed (e.g. glued) image of the holder (**authentication**), applied with a (hand) press in the form of a pattern of lines; between the lines there are often perforated holes.
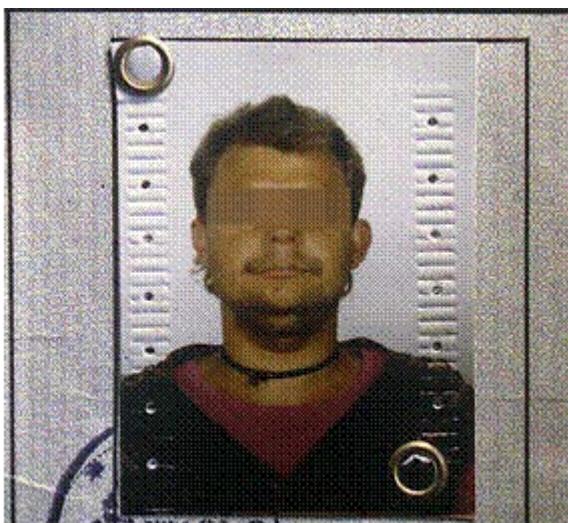
Authentication methods:
See also: ➡ *Embossing stamp*
See also: ➡ *Ink stamp*

See also: ➡ *Photograph of the holder - fixing methods*

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Thermal dye sublimation

Thermal dye sublimation: Like ➡ *thermal transfer* printers, *sublimation printers* use an ink ribbon. The dye on the foil is heated to a specific temperature at which it evaporates and then diffuses into the substrate*.* For that diffusion process a specially coated substrate is necessary. Depending on the temperature applied, a varying amount of dye is diffused into the substrate.

This facilitates the production of an image with continuous tone colours. *Thermal dye sublimation* is a possible integration technique for ➡ *biodata / photo / signature integration.*

Thermal transfer printing

Thermal transfer printing: The coloured ink ribbon is heated over a certain area, and the melted ink is then fully transferred from the ribbon on to the substrate. Halftones are generated by rasterising (screening). The transfer of a homogeneous layer of colour results in dots or areas with sharp edges.

Special ink ribbons, e.g. with metallic pigments, can also be used.

Thermal transfer printing is a possible integration technique for ➡ *biodata / photo / signature integration.*
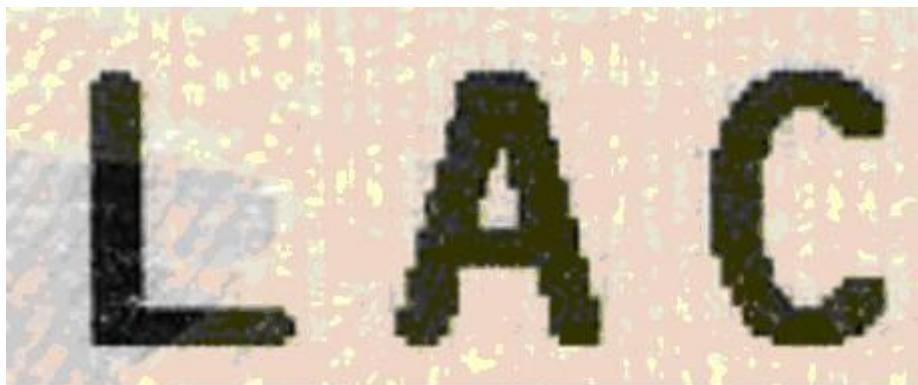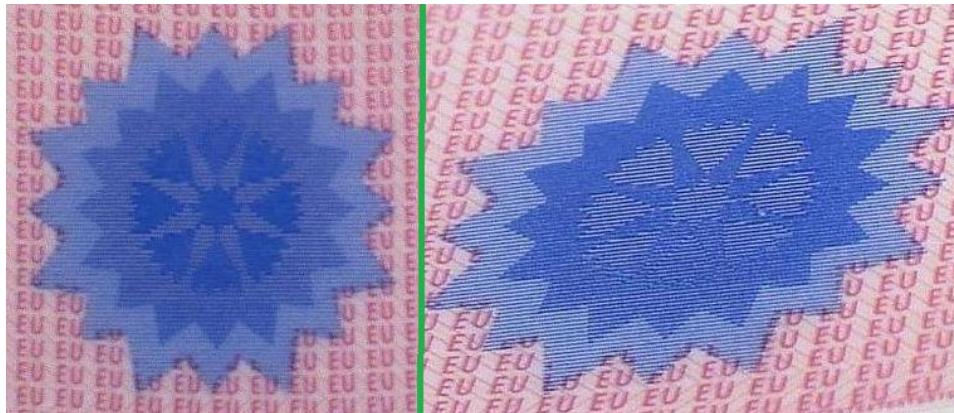
Thermochromic ink

Thermochromic ink is a special ink that changes colour in a reversible way at different temperatures.

Tilting effect

Tilting effect: An image or characters can be seen, or change, when the document is tilted, for example using the *Sealys Latent Filter Image* or the *Dynaprint*® security feature.

See also: ➡ *Oblique light*

**LFI® -
Latent Filter Image.
The cornflower can
be observed positive
or negative -
depending on
viewing angle.**

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Windowed motion strip (ribbon)

(MOTION™)

For other special tilting effects see:
➡ *Latent image*
➡ *Laser perforation with tilting effect*
➡ *Variable laser image.*

See also: ➡ *Windowed security thread*

See also: ➡ *OVD (optically variable device)*
See also: ➡ *OVI (optically variable ink)*

Transmitted light

Transmitted light is light shining through the object being viewed (here: page of a document). The object to be viewed is placed between the eye (or camera) and the light source.

Light source ... **Document examiner**

Page of document
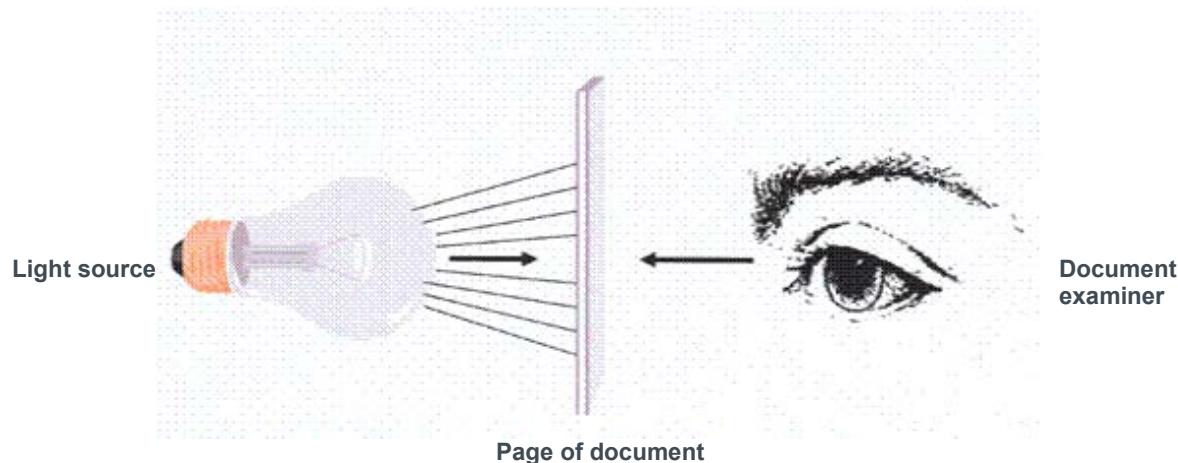
See also: ➡ ***Transparent window***
See also: ➡ ***Watermark***
See also: ➡ ***Secondary (ghost) image***
See also: ➡ ***Security thread***

See also: ➡ ***Co-axial light***
See also: ➡ ***Oblique light***

See also: ➡ ***UV light***

Transparent window

Look at the **PC page** or ➡ **PC card** against the light and the window becomes transparent.

The **transparent window** is incorporated into the substrate during manufacture. When using ➡ **transmitted light** and a magnifying device, e.g. the image of the holder, or a ➡ **CLI**® can become visible.

Asymmetric transparent window:

Asymmetric transparent window - here with a DID® (Diffractive Identification device) and in addition with a decoder lens for decoding IPI data on the previous page

Transparent border:

➡️ **_Secondary (ghost) image_**

See also: ➡️ **_PC (polycarbonate)_**
See also: ➡️ **_Transmitted light_**

UV light (ultraviolet light)

UV light belongs to the electromagnetic waves at the lower boundary of visible light (200 - 400 nm) - a source of light that is frequently used in document examination to analyse substrate brightness, fluorescent inks and other security features as well as tampering. If not further specified, we use **UV light at 365 nm**.

Ultraviolet "light" is not visible itself, only its effect, i.e. the **visible fluorescence** stimulated by UV light can be seen:

Look at the fluorescence (brightness) of the substrate under **UV LIGHT**: Security documents usually have a dull reaction:


Genuine document:
➡ **Substrate without optical brightener**

Counterfeit document

Questioned or faded documents can be examined with **UV light** to obtain improved sharpness and resolution. Many inks show a difference in visible fluorescence (➡ **fluorescent ink**). ➡ **Fluorescent security fibres** may fluoresce brightly. Additionally, when these fibres are disturbed by erasure by a forger, the difference can be noted under **UV light**.

Light source
(UV light)

Document
examiner

Page of document
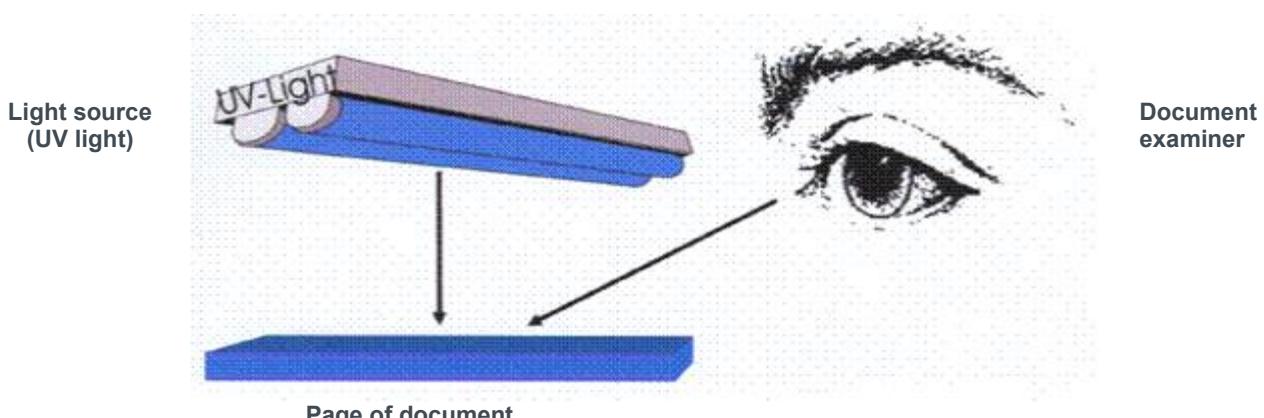
Simple UV hand light for document examination

➡️ *fluorescent ink.*

➡️ *fluorescent overprint*

See also: ➡️ *Co-axial light*
See also: ➡️ *Oblique light*
See also: ➡️ *Transmitted light*

Variable laser image

The image that can be seen changes depending on the angle of view.
See also: ➡ *Oblique light*

A *variable laser image* is a laser-engraved image with tilting effects, incorporated in plastic cards: images are engraved at different angles through an array of cylindrical lenses embossed into the surface of the card.
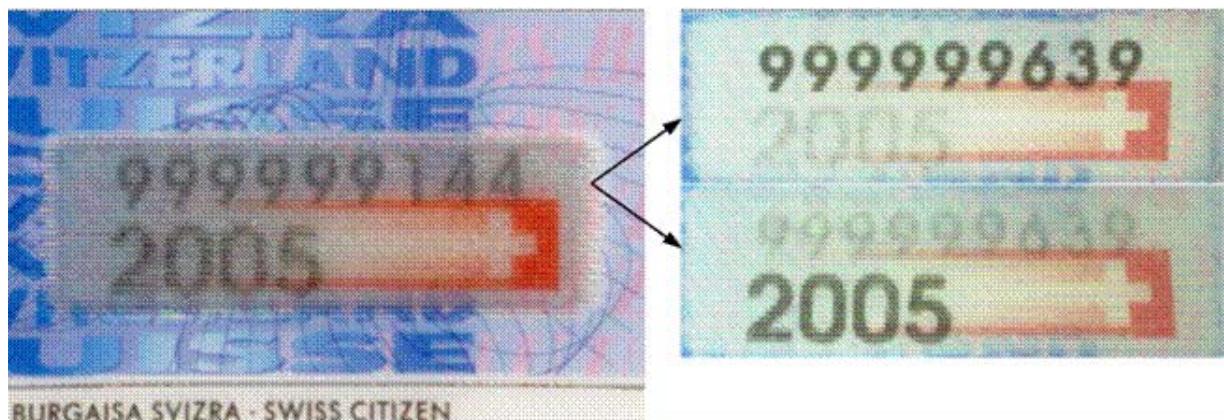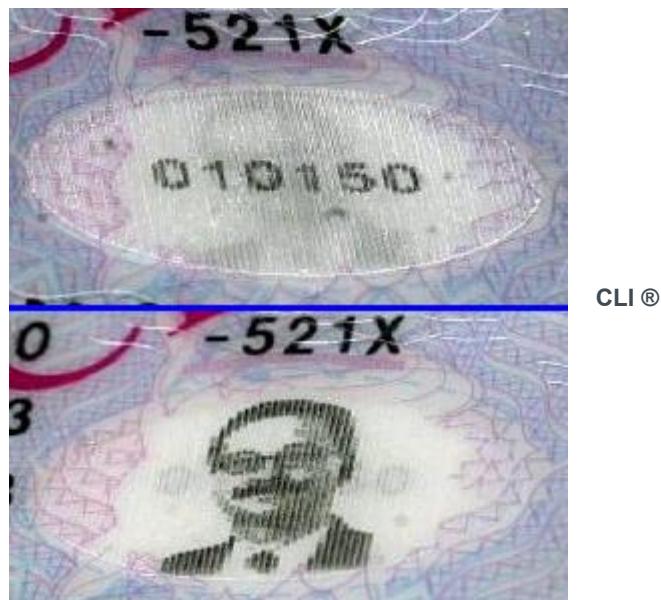
Examples:

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CLI ® - **C**hangeable **L**aser **I**mage

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MLI ® - **M**ultiple **L**aser **I**mage

MLI ®: depending on the angle of view either the serial number or the year of expiry can be seen.

CLI ®

See also: ➡ *Variable laser readable micro image*

➡ *Laser engraving*
➡ *Secondary (ghost) image*

See also: ➡ *Latent image*
See also: ➡ *OVD (optically variable device)*
See also: ➡ *OVI (optically variable ink)*
See also: ➡ *Tilting effect*

Visa

A *Schengen visa (entry permit)* can be issued to a person who plans to go to a Schengen state on a temporary basis. The stay must not exceed six months (in most cases) and the holder is not authorised to take up any employment. In general, an entry permit (visa) is not a work authorisation. However, different exceptions to this rule apply - for example concerning certain temporary job assignments.

Visa requirements for non-Schengen nationals

Regulation (EU) 2018/1806 of the European Parliament and of the Council of 14 November 2018 listing the third countries whose nationals must be in possession of visas when crossing the external borders and those whose nationals are exempt from that requirement.

- The regulation provides a **common list** of countries whose nationals must hold a visa when crossing the external borders of an EU member state *(Annex I or negative list)*, and
- the regulation also lists the countries whose nationals are exempt from the visa requirement *(Annex II - positive list).*
  https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32018R1806.

- Generally, a short-stay visa issued by any of the countries in the Schengen area entitles its holder to travel throughout the Schengen states **for stays of no more than 90 days in any 180-day period.** Visas for visits exceeding that period remain subject to national procedures.

- Visa requirements are waived for non-EU nationals who hold a *local border traffic permit*.

- Visa requirements are waived for ***non-EU school pupils who are residents*** of a member state and travelling with their schools for the purpose of a school excursion.

- Visa requirements are waived for ***recognised refugees*** and ***stateless persons*** who hold a travel document from the EU member state in which they are residing.

- Member states may grant exceptions to the visa requirement or the ***visa waiver*** to certain categories of persons such as, for example, holders of diplomatic, service and special passports; civilian air and sea crews or flight crew and attendants on emergency/rescue flights; other specific cases of exemption are detailed in the regulation.

- Under strict conditions and after assessment by the Commission, another mechanism allows for the ***temporary reintroduction of visa requirements*** for citizens of a non-Schengen country when there is an emergency situation caused by abuse of the visa-free regime by nationals of a non-Schengen country on the positive list leading to a substantial and sudden increase in the numbers of 1) unfounded asylum applications, 2) irregular migrants, or 3) rejected readmission applications.

⬆ **top**

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Watermark - traditional watermarks

Look at the watermark against the light - observe it primarily using ➡ ***transmitted light***.
- Where the substrate is thicker you will see a darker image.
- Where the substrate is thinner, you see more light and a clearer image.
- If, however, you put the page on a dark surface, the light areas become darker.

Secondly observe using ***magnification.***

You can also look at the raised and lowered structures on the surface of the paper substrate under ➡ ***oblique light***.

Traditional watermarks are designs or patterns put into paper during its production: pictures, text or character designs produced by pressure on the substrate during manufacture, leading to a varying thickness of the paper. They are sometimes also called ***Fourdrinier watermarks.***

- A ***watermark*** can be ***repeated,*** **or not.**
- A watermark can be ***positioned*** (always on the same place on a page), as opposed to a ***random watermark.***

As its image or pattern is caused by thickness or density variations in the paper substrate, the ***traditional watermark,*** as opposed to its printed imitation, will **not** appear under ➡ ***UV light.***

Please do not confuse the traditional watermark with a ***digital watermark,*** which is printed, often on computer-printed material and used to identify the ownership, or where an identifying cipher is encoded into digitised music, video or picture files.

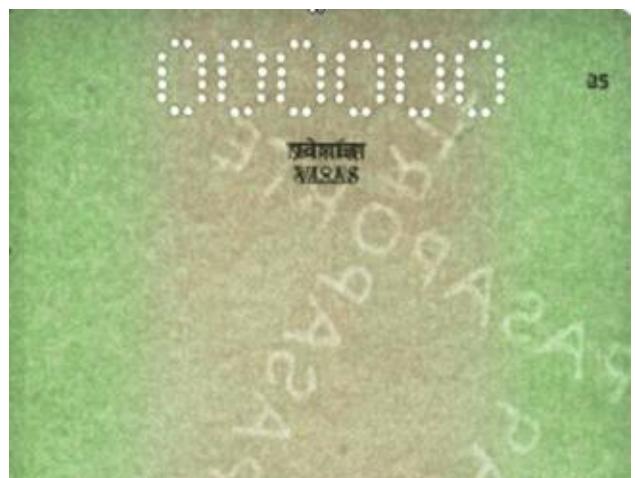We distinguish different types of watermarks:

- ## **Single tone watermark**

The single-tone watermark can be light or dark.

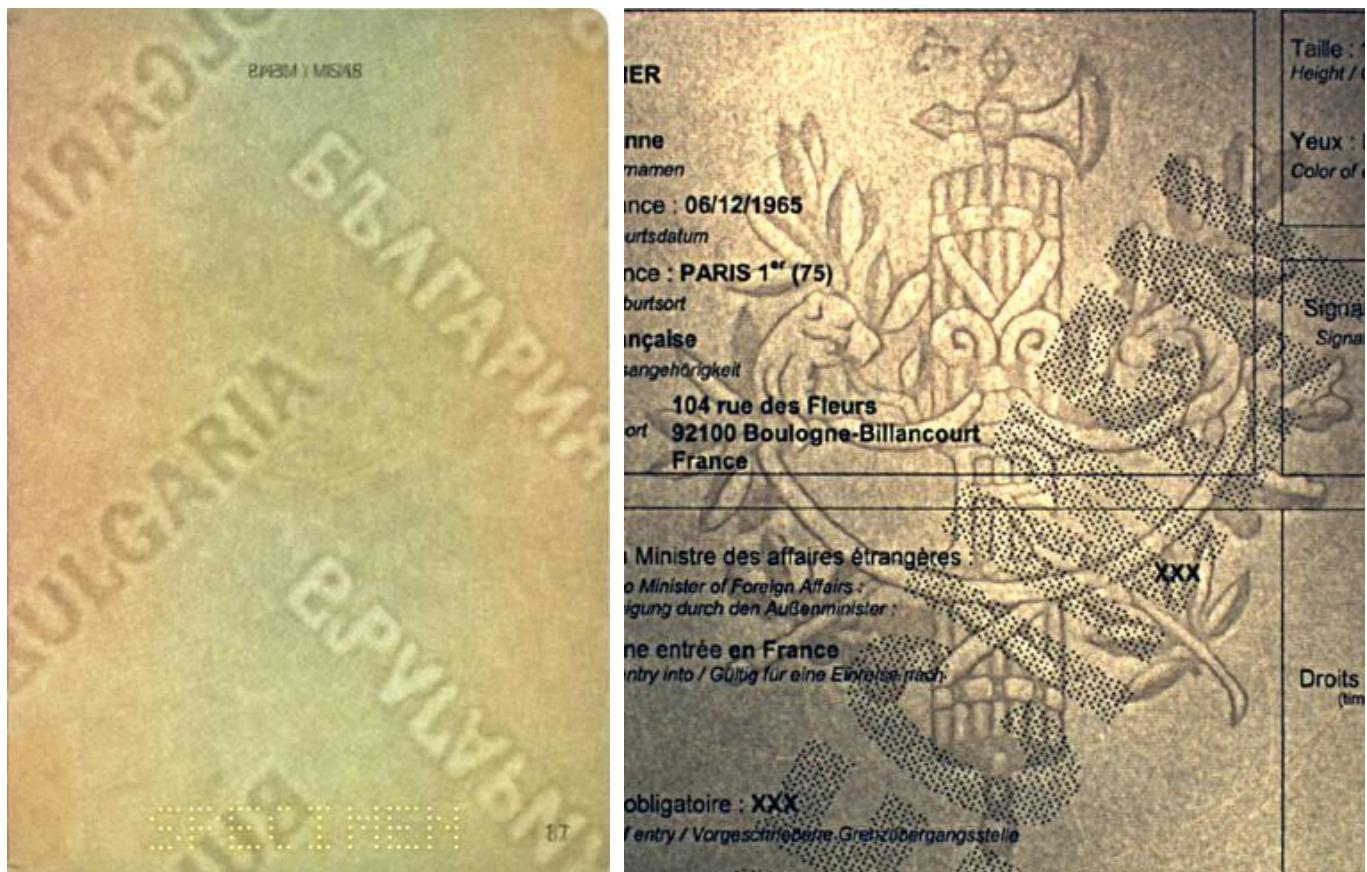**Single tone (dark) watermark**

Single tone (light) watermark

Electrotype watermark

- ## Duotone watermark

The motif of a *duotone watermark* is both light <u>and</u> dark.

• Multitone watermark

Sometimes also called *cylinder mould watermark or shadow watermark*. Typically only used on banknotes, passports and other high value documents by the high security printing industry.

• **Mould made watermark combined**

Multitone watermarks can be combined with much brighter, round shaped, positioned *'SkyLight' watermarks* (very thin paper) and, or, with an ➡ *electrotype watermark*[(062)]*:*

Mould made multitone watermark

Cornerstone® watermark and *Edgestone watermark* are also positioned watermarks.

The End.

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This glossary does NOT provide scientific definitions – its main aim is <u>to help</u> anyone who is not involved in checking security documents on a daily basis <u>to understand some of the more important security features</u> contained in such documents. To this end, simple, non-exhaustive definitions, examples and explanations are provided.

In order to consult the same chapter in a different language version of this document, look for the corresponding <u>grey three-digit chapter number</u> on the top right-hand side of each chapter.

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